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HEBREW CODICOLOGY

Historical and Comparative Typology of Hebrew Medieval Codices based on the Documentation of the Extant Dated Manuscripts Using a Quantitative Approach

Preprint internet English version 0.1

This English preprint version of the Typology contains at this stage the first five chapters of the typology of which only the first one was edited (pp. 1-117 out of 358 pages). Versions will be updated following the progress of the final editing and further translation.
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List of Abbreviations and Selected Bibliography


Agati, Introduzione alla codicologia = M.L. Agati, Il libro manoscritto: Introduzione alla codicologia (Studia Archeologica 124), Rome 2003

Agati, Codicologia comparata = Idem, Il libro manoscritto da Oriente a Occidente: Per una codicologia comparata, Rome 2009


Allony, Jewish Library = Jewish Library in the Middle Ages: Book Lists from the Cairo Genizah, Jerusalem 2006 (in Hebrew).


Assaf, BeOholey Ya'aqov = S. Assaf, BeOholey Ya’aqov, Jerusalem 1943 (in Hebrew).


Bernheimer, Paleografia Ebraica = C. Bernheimer, Paleografia ebraica, Florence 1924

Birnbaum, Hebrew Scripts = S.A. Birnbaum, The Hebrew Scripts, London 1954 (vol. 2, the plates) and Leiden 1971 (vol. 1, the text)


Blau, Althebräischen Buchwesen = L. Blau, Studien zum althebräischen Buchwesen und zur biblischen Litteraturgeschichte (Studien zum althebräischen Buchwesen und zur biblischen Litteratur- u. Textgeschichte, 1; Reprinted from Jahresbericht der Landes-Rabbinerschule in Budapest, 1901/1902), Strasbourg 1902


Bozzolo & Ornato, Codicologie quantitative = C. Bozzolo & E. Ornato, Pour une histoire du livre manuscrit au Moyen Âge: Trois essais de codicologie quantitative, Paris 1980


Briquet, Opuscula = C.M. Briquet, Briquet’s Opuscula (Monumenta chartae Papyraceae Historiam Illustrantia 4), Hilversum 1955


Busonero (ed.), La fabbrica del codice = La fabbrica del codice: Materiali per la storia del libro nel tardo medioevo, ed. P. Busonero et al., Rome 1999


Catalogues

Bernheimer Catalogue = C. Bernheimer, Codices hebraici Bibliothecae Ambrosianae, Florence 1933

Cassuto Catalogue = U. Cassuto, Codices vaticani hebraici, [Vatican City] 1956


Harkavy & Strack Catalogue = A. Harkavy & H.L. Strack, Katalog der hebräischen Bibelhandschriften der kaiserlichen öffentlichen Bibliothek in St. Petersburg, St. Petersburg–Leipzig 1875


Richler & Beit-Arié Catalogue (Vatican) = Hebrew Manuscripts in the Vatican Library – Catalogue, Compiled by the Staff of the Institute of Microfilmed Hebrew Manuscripts in the Jewish National and University Library, Jerusalem, ed. B. Richler, Palaeographical and Codicological Descriptions by M. Beit-Arié in collaboration with N. Pasternak (Studi e testi 438), Vatican City 2008


Róth & Striedel Catalogue = E. Róth & H. Striedel, Die Handschriften der Sammlung H.B. Levy an der Staats- und Universitätsbibliothek Hamburg (Verzeichnis der orientalischen Handschriften in Deutschland 6.3; Hebräische Handschriften 3), Wiesbaden 1984

Schwarz Catalogue (Austria) = A.Z. Schwarz, Die hebräischen Handschriften in Österreich, vol. 1, Leipzig 1931

Schwarz Catalogue (ÖNL) = Idem, Die hebräischen Handschriften in der Nationalbibliothek in Wien, Leipzig 1925

Steinschneider Catalogue (Berlin) = M. Steinschneider, Die Verzeichnis der hebräischen Handschriften (Handschriften-Verzeichnisse der Königlichen Bibliothek zu Berlin 2), vols. 1–2, Berlin 1878–1897

Steinschneider Catalogue (Hamburg) = Idem, Catalog der hebräischen Handschriften in der Stadtbibliothek zu Hamburg, Hamburg 1878

Catane, Gloses = M. Catane, Recueil des Gloses, Jerusalem 1988 (in Hebrew, enlarged edition)

Chwolson, Corpus inscriptionum = D. Chwolson, Corpus inscriptionum hebraicarum: Enthaltend Grabinschriften aus der Krim und andere Grab- und Inschriften in alter hebräischer Quadratschrift sowie auch Schriftproben aus Handschriften vom IX.–XV. Jahrhundert, St. Petersburg 1882 (Reprint: Hildesheim 1974)

Codices hebraicis = Codices hebraicis litteris exarati quo tempore scripti fuerint exhibentes (Monumenta Palaeographica Medii Aevi, Series Hebraica, I–IV)


Part II : M. Glatzer, C. Sirat, M. Beit-Arié, in collaboration with T. Leiter et al., De 1021 à 1079, Paris–Jerusalem–Turnhout 1999


Karabacek, *Arabischer Papier* = J. Karabacek, *Das arabischer Papier* (Mittheilungen aus der Sammlung der Papyrus Erzherzog Rainer 2/3), Vienna 1887


Karabacek, *Neue Quellen* = Idem, *Neue Quellen zur Papiergeschichte* (Mittheilungen aus der Sammlung der Papyrus Erzherzog Rainer 4), Vienna 1888


*Manuscrits médiévaux* = *Manuscrits médiévaux en caractères hébraïques portant des indications de date jusqu’à 1540*


**Part II**: M. Beit-Arié, C. Sirat, in collaboration with A. Attali et al., *Bibliothèque de France et d’Israël: Manuscrits de petit format jusqu’à 1470*, Paris–Jerusalem 1979 (in two volumes)

**Part III**: C. Sirat, M. Beit-Arié, in collaboration with A. Attali et al., *Bibliothèque de France et d’Israël: Manuscrits de petit format de 1471–1540*, Paris–Jerusalem 1986 (in two volumes and supplement to part I)

**MS** = Manuscript

The notations for the manuscripts are comprised of the abbreviation MS followed by the place-name of the library where they are kept, the name of the library or institution housing the manuscript, and its call mark in that collection. Manuscripts kept in large collections are referred only by their place-name without the name of the library. The following are the place-names and libraries or institutions, or their abbreviations as employed in the manuscript references:

Amsterdam, UBA = Universiteitbibliotheek, Rosenthaliana

Arras, Bibliothèque municipale
Berlin = Staatsbibliothek zu Berlin (Preussischer Kulturbesitz)
Bern, BB = Burgerbibliothek
Bologna, BU = Biblioteca Universitaria
Breslau, Seminar = Jüdisch-theologisches Seminar in Breslau
Budapest, MTA = Magyar Tudományos Akadémia, Könyvtár (Library of the Hungarian Academy of Sciences)
Cambridge, St John’s College = St John’s College
Cambridge, Trinity College = Trinity College
Cambridge = University Library
Cincinnati, HUC = Hebrew Union College
Copenhagen, Royal Library = Det Kongelige bibliotek
Dresden, Landesbib. = Sächsische Landesbibliothek
Firenze, Bib. Nazionale = Biblioteca Nazionale Centrale
Firenze, Bib. Laurenziana = Biblioteca Medicea Laurenziana
Frankfurt am Main, UB = Universitätsbibliothek Johann Christian Senckenberg
Hamburg, = Staats- und Universitätsbibliothek
Karlsruhe, Badische Landesbibliothek
Jerusalem = The National Library of Israel (formerly: The Jewish National and University Library)
Leiden, University = Universiteitsbibliothek
Leipzig, UB = Universitätsbibliothek
Lisbon, Bib. Nacional = Biblioteca Nacional de Portugal
Livorno, Talmud Tora = Biblioteca del Talmud Tora
London = British Library
London, Beth Din = Beth Din and Beth Hamidrash Library. The manuscript collection was offered for sale at Christie’s Auction House in 1999.
London, Jews’ College = Jews’ College (now London School of Jewish Studies). Part of the library’s collection has been sold by Christie in 1999; the Montefiore collection, which had been deposited in this library, was returned to the trustees of the collection in 2001 and sold in 2004.
London, Valmadonna = Valmadonna Trust Library
The manuscript collection was sold by Sotheby’s in 2016 and 2017.
Madrid, Universitat = Biblioteca de la Universitat Complutense
Mantua, CI = Comunità Israelitica (kept in Biblioteca Comunale)
Milano, BA = Biblioteca Ambrosiana
 Moscow, RSL = Russian State Library, Guenzburg Collection
 Munich = Bayerische Staatsbibliothek
 New York, Columbia = Columbia University
 New York = Jewish Theological Seminary of America
 Oxford = Bodleian Library
 Oxford, CCC = Corpus Christi College
 Paris, AIU = Alliance israélite universelle
 Paris, Bibliothèque Mazarine
 Paris = Bibliothèque nationale de France
 Parma = Biblioteca Palatina
 Prague, NL = National Library
 Rome, Bib. Angelica = Biblioteca Angelica
 Rome, Bib. Casanatense = Biblioteca Casanatense
 Rome, Bib. Emanuele = Biblioteca Nazionale Centrale Vittorio Emanuele II
 Rovigo, Accademia = Biblioteca dell’Accademia Concordi
 San Francisco, Sutro = Sutro State Library
 San Lorenzo de El Escorial = Biblioteca Real
 Sassoon (private), formerly kept in Letchworth, England, a considerable part of the
 large collection has been sold in auctions
 St. Petersburg = St. Petersburg, National Library of Russia
 St. Petersburg, Oriental Institute = Oriental Institute of the Russian Academy of
 Sciences
 Strasbourg, BNU = Bibliothèque nationale et universitaire
 Toledo, Cathedral = Archivo y Biblioteca Capitolares
 Tübingen, UB = Universitätsbibliothek
 Vatican = Biblioteca Apostolica Vaticana
 Venice, Bib. Marciana = Biblioteca Nazionale Marciana
 Vienna, ÖNB = Österreichische Nationalbibliothek
 Vienna, IK = Israelitische Kulturgemeinde

Muzerelle, Vocabulaire codicologique = D. Muzerelle, Vocabulaire codicologique:
 Répertoire méthodique des termes français relatifs aux manuscrits, Paris 1985
A multilingual hypertext edition of this illustrated dictionary has been published on the internet, version 1.1 2002-2003 http://vocabulaire.irht.cnrs.fr/vocab.htm. This edition combines Italian and Spanish glossaries based on Muzerelle’s terminology, which had been printed earlier: M. Maniaci, Terminologia del libro manoscritto (Addenda: Studi sulla conoscenza, la conservazione e il restauro del materiale librario 3), Rome 1997; P. Ostos, M.-L. Padro & E. Rodríguez, Vocabulario de codicologia, Madrid 1997. The online edition also experiments with the inclusion of an incomplete set English terms.


Ornato, Apologia = E. Ornato, Apologia dell’apogeo: Divagazioni sulla storia del libro nel tardo medioevo, Rome 2000


Ornato et ses collègues, Face cachée = La face cachée du livre médiéval: L’histoire du livre vue par Ezio Ornato, ses amis, ses collègues, Rome 1997


Parkes, Pause and Effect = M.B. Parkes, Pause and Effect: An Introduction to the History of Punctuation in the West, Aldershot 1992


The Makings, the Clients, Censorship’, [Jerusalem] 2009 (Dissertation, in Hebrew, the Hebrew University).
http://shemer.mslib.huji.ac.il/dissertations/W/JMS/001494402.pdf


Piccard, Watermarks = http://www.piccard-online.de


Rosenthal, Muslim Scholarship = F. Rosenthal, The Technique and Approach of Muslim Scholarship (Analecta Orientalia 24), Rome 1947


Saenger, Space Between Words = P. Saenger, Space Between Words: The Origins of Silent Reading, Stanford 1997

Santifaller, Beschreibstoffe = L. Santifaller, Beiträge zur Geschichte der Beschreibstoffe im Mittelalter, I: Untersuchungen (Mitteilungen des Instituts für Österreichische Geschichtsforschung 16.2) Graz–Köln 1953

Sefer Ḥasidim = Sefer Ḥasidim, ed. Y. Wistinetzki, Berlin 1891; eds. Y. Wistinetzky & Y. Freimann, Frankfurt am Main 1924

Sefer Ḥasidim, MS Parma = Sefer Ḥasidim – MS Parma H 3280 (facsimile edition) with an introduction by Ivan Marcus, Jerusalem 1985


Sirat, Écriture et civilisations = Idem, in collaboration with M. Ducan, Écriture et civilisations, Paris 1976

Sirat, Hebrew Manuscripts = Idem, Hebrew Manuscripts of the Middle Ages, ed. and transl. N. de Lange, Cambridge 2002


Sirat, Writing as Handwork = Idem, Writing as Handwork: A History of Handwriting in Mediterranean and Western Culture, ed. L. Schramm, Appendix by W.C. Watt (Bibliologia 24), Turnhout 2006

Specimens of Mediaeval Hebrew Scripts

Volume 1: M. Beit-Arié with participation of E. Engel & A. Yardeni, Oriental and Yemenite Scripts, Jerusalem 1987

Volume 2: M. Beit-Arié & E. Engel, Sefaradic Script, Jerusalem 2002

Volume 3: E. Engel & M. Beit-Arié, Ashkenazic Script, Jerusalem 2017

Steinschneider, Vorlesungen = M. Steinschneider, Vorlesungen über die Kunde hebräischer Handschriften, deren Sammlungen und Verzeichnisse (Zentralblatt für Bibliothekswesen 19), Leipzig 1897 (Reprint: Jerusalem 1937; Wiesbaden 1968)


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Special Notations

[   ] probable reading

^   ^ interlinear addition
{ } erasure
[[ ]] lacuna
< > completion, insertion of an explanation or comment, or ellipsis within a quote <…>
Preface

This book is the product of my fifty-year long fascination with the study of Hebrew manuscripts. The surviving Medieval codices – the most important foundation for the investigation of various genres and strata of Jewish literature which had been created and transmitted in Hebrew or in Hebrew script for some 1500 years, until the spread of the Hebrew printing during the sixteenth century – captivated me from the moment I became aware of their existence during my first year as a university undergraduate. The thrill of this encounter derived not only from the diverse texts that were communicated in this medium, but especially from the direct and sensuous contact with concrete historical and literary testimonies and with the process of the transmission and reception of these texts. My involvement with these palpable artefacts brought to life the Jewish societies that initiated the production of books and consumed them. Moreover, they drew me into close intimacy with the makers of these books and made me grow fond of their complex craft, skill, and art. This immediate contact blurred time spans, bridging the gap between an unknown past and the researcher in quest of its hidden material, social, mental, and spiritual treasures, and filled me with an intoxicating sense of historical continuity.

The goals of this book were several. The first was to establish a diachronic typology of the Medieval book in Hebrew script as a field of historical inquiry in its own right, using the method of quantitative codicology. This was to be achieved on the basis of a detailed documentation of all the extant dated Hebrew manuscripts and their comparison to manuscripts in other scripts produced in the same areas. The second goal was to present the historical and social implications of this typology. The third was to provide the many scholars and students who use manuscript sources or prepare critical editions of Medieval texts with a tool or a guide that would enable them to identify the provenance of a manuscript and to estimate the time of its copying, as well as make them acquainted with the manifold scribal practices in the various zones, and, indeed, for the purposes of textual criticism and the understanding of text transmission. The fourth goal was to emphasise the importance and indispensability of a material examination of the codices when dealing with texts and their transmission.
and with editorial procedures. Above all, I have sought to demonstrate the need to regard hand-written books not only as receptacles of texts, but also as cultural artefacts replete with information without which Jewish Medieval history would remain impoverished. In their production practices, design and the various records of owners and users over the time these tens of thousands of objects handed down are per se authentic historical sources that shed light upon the societies that made them. Classifying manuscripts according to provenance and time of production should enrich historical research with most reliable data about the intellectual character and activity of Jewish diasporic Medieval communities, and may even provide evidence about their sizes. The identification of the Byzantine type of script, for example, reveals that thousands of manuscripts were produced in the Byzantine zone from the thirteenth century onwards, reflecting the spiritual quality and level of literacy of Jewish communities in Greece, western Asia Minor, and the Balkans, about which there is hardly any information from other sources. The colophons of the Byzantine codices that state the date and place of copying, like colophons from other zones, are sometimes the only source of information about Jewish communities in those places. The comparison of the distribution of topics in the dated Byzantine manuscripts with their distribution in manuscripts produced elsewhere is both unexpected and instructive: the proportion of scientific manuscripts as well as of philosophical and kabbalistic manuscripts are the highest in this corpus, and together they comprise nearly half of all the manuscripts copied in the Byzantine zone. Classification according to type of script of the dated manuscripts copied in Italy has produced surprising data about the proportions of manuscripts in Sefardic scripts copied by immigrants from Spain and Provence and that of manuscripts in Ashkenazic scripts produced by immigrants from the German lands in Italy. I have tried to the best of my ability to disseminate this awareness and its implications for the study of cultural and social history in Jewish studies, admittedly not always with success. However, it appears that of late, Medieval Jewish studies have been showing an increasing appreciation of the approach suggested here, and its applications are growing in numbers.

Some five decades ago, I published, at the suggestion of my colleague and research partner Colette Sirat, a short work entitled *Hebrew Codicology: Tentative Typology of Technical Practices Employed in Hebrew Dated Medieval Manuscripts*, Paris, Institut
de Recherche et d’Histoire des Textes, 1977. Despite the provisory status of this typology of medieval Hebrew book craft, as pointed out in the work’s subtitle, it met with great demand, being the first attempt to establish a diachronic and synchronic typology of a selection of codicological characteristics of Hebrew manuscripts; moreover, it attempted to base this typology on quantitative methodology and on the documentation of manuscripts that included both the date and the place of production. It is no wonder, therefore, that four years later a revised version of this modest publication was reprinted by the Israel Academy of Sciences and Humanities (Jerusalem 1981). The work dealt with the main codicological characteristics of several hundred medieval dated manuscripts, documented in their respective libraries, as part of the Hebrew Palaeography Project under my direction. This project was sponsored by the Israel Academy of Sciences and Humanities with the participation of the Jewish National and University Library, and the close collaboration with a parallel project headed by Colette Sirat, under the auspices of the Institut de Recherche et d’Histoire des Textes in Paris, which is part of France’s Centre National de la Recherche Scientifique. In the years since the publication of this tentative typology, the Hebrew Palaeography Project has thoroughly documented nearly all the accessible dated extant manuscripts worldwide in addition to many undated codices in which the name of the copyist was nonetheless stated or had been identified. Moreover, the tens of thousands of codicological, textual, graphic, and numerical data collected from the manuscripts in situ were encoded and processed at the Hebrew Palaeography Project in Jerusalem in an electronic database entitled SfarData, developed and expanded continuously over the years by Eylon Meroz and the software team of Meroz Systems, in accordance with the requirements of our research. A sophisticated data retrieval system has been especially designed and developed, allowing an unlimited number of classificatory searches, the retrieval of combined variables, cross-searches, and complex statistical and graphic processing, as well as the integration of different data types – encoded, alphabetic, numerical, and image data. The comprehensive documentation, on the one hand, and the search, classification, and data processing tool on the other, both enable and justify an exhaustive and final (for the moment) presentation of a typology of the material, technical, technological, and graphical characteristics of handwritten medieval codices in Hebrew script; this according to their types and geocultural regions, and based on the investigation of the vast majority of the extant dated manuscripts, half of which also include their place of production.
The electronic database that serves as the foundation for this book has also expedited the decision to publish the work electronically prior to printing. In addition to the desire to make this guide for Hebrew manuscripts accessible, the electronic version allows links to the illustrations included in SfarData to be presented, unlimitedly, for easy and quick access; moreover, it allows a continuous updating of the data. Furthermore, the historical typology presented in the electronic edition is integrated within the SfarData website, accessible to the public on the website of the National Library of Israel. The typology has thus been transformed from a merely historical and comparative study to a useful codicological handbook open to the public desiring to study or consult Hebrew manuscripts. It includes general overviews and explanations of the technical components of codex production in general and of the production of the Hebrew codex in particular, and serves as an instructive introduction to readers who wish to make use of the SfarData database and exploit the vast information it contains.

The need to devote a comprehensive work to the typology of the medieval Hebrew codex in its various regions and transformations stemmed not only from the significant developments in the field of Hebrew codicology and from the understandable desire to sum up five decades of detailed and systematic field research, but also from the growing interest in the material aspects of the text (nowadays frequently designated in English as 'material text'), and from the growing awareness of its importance in textual research. The very act of assembling microfilm copies of nearly all of the extant Hebrew manuscripts and fragments, identifying and cataloguing them – the extraordinary achievement of the Institute of Microfilmed Hebrew Manuscripts in the Jewish National and University Library (nowadays the National Library of Israel) in Jerusalem – has considerably accelerated the use of medieval manuscripts for the purpose of textual research and has multiplied by a tremendous factor the number of users, making the current handbook useful and much needed. This scholarly trend is dramatically promoted by the recent advanced technology of digitization of manuscripts that encourages many libraries to make also their Hebrew manuscript collections accessible on their websites, and inspired the National Library of Israel to launch Ktiv – The International Collection of Digitized Hebrew Manuscripts, a joint venture with the Friedberg Jewish Manuscript Society.
This book is, therefore, both an introduction to medieval Hebrew manuscripts and a typological guide to their characteristics, based on the exhaustive examination of almost all the extant Medieval manuscripts dated up to 1540, as well as manuscripts whose copyists were either mentioned or identified, especially those displaying their place of production, in nearly all libraries and collections around the world. This methodological foundation provides us with a most reliable skeletal frame for establishing a typology of the utmost possible validity within the limits of the accidental survival of dated manuscripts, especially if multiple witnesses are available. At the same time, I did not avoid including in this introduction and handbook detailed discussions on specific topics, queries regarding the hypothetical evolution or consolidation of scribal practices that might have existed prior to the earliest extant manuscripts in each region, as well as speculations which concern the history of the production of the Hebrew codex and its development in its various regions. In addition, a considerable, albeit secondary, part of the book, has been devoted to comparisons of regional Hebrew book craft practices with parallel practices known from other scripts, especially Latin, Arabic, and Greek, which were common in the areas settled by Jews. Such a comparative approach is a *sine qua non*, given the historical reality of the Jewish dispersed communities and the impact of surrounding cultures on them, notwithstanding their insularity in certain regions.

Several sections of this work have been published in one form or another over the past forty years in journals and in my own books. Most of these have taken on a new guise, all have been updated in accordance with the current database, and they are now presented here in a coherent and systematized form. In fact, this work is the summing up of my investigations in the field of the Hebrew handwritten book production, with which I have been involved since 1965, and includes the evolution of my approach up to its current formulations and conclusions.

I composed the greater part of this book in Oxford, on the basis of documented data, literary sources, and the study of research literature over almost fifty-year period of field research and study. I began to write the book in 2003 as a Fowler Hamilton Visiting Research Fellow at Christ Church, Oxford. I wish to thank the Governing Body of that institution for selecting me as fellow, allowing me to begin writing the book under the most agreeable conditions an author could wish for; this at a university endowed with a most valuable collection of Hebrew manuscripts and with a rich
collection of publications on the study of medieval codices, accessible at Duke Humfrey's reading room in the Bodleian Library. Many of the book’s chapters were written while I was residing in the beautiful Yarnton Manor in 2005, as well as in 2007-2012, during the months in which I taught under the auspices of the Hebrew and Jewish Unit of Oxford University, and as a fellow at the Oxford Centre for Hebrew and Jewish Studies. The peaceful rural environment, the loveliness of Yarnton Manor, the welcoming and pleasant atmosphere of the Centre and the services rendered by its employees contributed invaluably to the writing of this book. Very special thanks are due to Piet van Boxel, then academic director of the Centre and Curator of the Hebraica and Judaica collections at the Bodleian Library. Some chapters of the book were written during 2005/6 at the Center for Advanced Judaic Studies at the University of Pennsylvania in Philadelphia, under the direction of David Ruderman. I cannot overstate the value of this centre for scholars in the field of Jewish studies. Its efficient, convenient and gracious assistance to scholarly research and its needs, the infrastructures at the disposal of the fellows, and the multidisciplinary dialogue promoted by the group structure made it a unique setting, unparalleled by any other research centre in the field of Jewish studies.

The Israel Academy of Sciences and Humanities deserves special gratitude for sponsoring the Hebrew Palaeography Project from its inception in 1965, and for fully, then partially, funding its activity for many years. Professor Gershom Scholem, who for many years headed the Academy’s steering committee, at the time of the project’s creation and until his passing, enthusiastically supported the ambitious project to document all the dated Hebrew manuscripts in order to establish a codicological and palaeographic typology, as presented to him by two young scholars just embarking on their research careers, namely Colette Sirat, who first conceived the idea of documentation, and myself. I feel deep gratitude to Colette Sirat, as well as great esteem, not only for initiating the project, both in Jerusalem and Paris, and the publication of most of its scholarly output, but also for the pleasant and loyal partnership of many years. Establishing the current typology could not have been imaginable without the Hebrew Palaeography Project's doings, namely, the fieldwork consisting of the documentation of all manuscripts that were either dated or bore their scribes’ names, in two-hundred and fifty libraries and collections in Europe and in the United States, and the elaboration, throughout several decades, of the database created
in Jerusalem. I wish to thank all the many co-workers and colleagues who participated with enthusiasm and creativity in the task of documenting, reviewing, processing, computerizing, and improving the retrieval system during the project’s five decades. I wish to mention especially my colleague the late Mordecai Glatzer, a senior partner meticulous in the documentation and description of the manuscripts, who made a crucial contribution to the conversion of the questionnaire data into our database in the early stages of the computerization, and the late Leah Shalem, who documented many manuscripts in European libraries during the project’s early phase; Edna Engel, who delved deeply into the study of the scripts, developing and elaborating this field; and Tamar Leiter, who significantly advanced the database and retrieval software. I owe special thanks to Nurit Pasternak, the most challenging, rigorous and insightful critic of my work. I am also grateful to Eylon Meroz, who programmed the computerized the codicological database (SfarData) with its sophisticated processing and retrieval software, accompanied the project for many years and with both wisdom and resourcefulness, led the programming team, and oversaw the transformation of the database into an accessible website. Moreover, I am profoundly indebted to the National Library of Israel (formerly the Jewish National and University Library, which I directed in the years 1979-1990), which housed the project from its inception in 1965, and provided it with essential services. I am similarly indebted to the Institute of Microfilmed Hebrew Manuscripts at the National Library in Jerusalem (which I had the privilege of directing from 1970 to 1978) and to its staff, under the direction of the late Yisrael Ta-Shma and later by Benjamin Richler. The rich collection of microfilmed manuscripts housed there aided me in reviewing the data documented for the manuscripts examined in their respective libraries. My colleague and friend, Ephraim Wust, who until recently was in charge of the Arabic manuscripts in the National Library, always assisted me willingly. For more than thirty years I have taught introductory courses and seminars in the field of Hebrew codicology to advanced students at the Hebrew University. The dialogue with my students in those classes enriched my research significantly and I am grateful to them for this. A source of inspiration and knowledge of the modes of presentation of Latin codicology was a draft of a number of the basic chapters prepared by the late J. Peter Gumbert, formerly Professor of Latin Palaeography at Leiden University, who was a fellow at the Hebrew University’s Institute of Advanced Studies in 1991 in a
group I initiated on comparative codicology. I am grateful to him for making this draft available to me.

The research for this book was supported by the Israel Science Foundation, which provided me with grants for the years 2000-2007, enabling the SfarData codicological database to be adapted for the internet environment. These funds also supported the upgrading and elaboration of the retrieval software that promoted the typological and historical research presented in the current book. A grant from the Israel Science Foundation for the years 2008-2011 made possible the study of a selection of Latin manuscripts in major European collections for the purpose of supplementing comparative data which had not been examined comprehensively or systematically in codicological studies of Latin manuscripts.

I shall conclude after the manner of the author and scribe Sa‘adya ben David ‘Adani, who, upon completing his many copied texts, would beg forgiveness in his colophons “for any mistakes or errors I committed, and for adding or omitting” (על כל מה שטעמתי והוסמתי וגרמתי).
Chapter 1: Introduction

1. The codex

The books produced in Hebrew scripts during the Middle Ages prior to the invention of the printing press, just like those written in other scripts in regions surrounding the Mediterranean basin – the Middle East, Central Asia, Europe, and North Africa – were shaped as codices, unlike the books of the ancient world, which were inscribed on scrolls. These cultural artefacts, which mediated between the authors or editors of texts and their readers, embodied verbal messages – whether concrete or abstract – in a material and visual form. They guaranteed cultural continuity and cohesion, yet, and at the same time, were receptacles of new concepts and ideas – be they religious, philosophical, literary, or scientific – and an effective vehicle for their dissemination and propagation over vast areas. Multiple factors and interests converged in the making of books: overt and covert, conscious and unconscious, material and technical, graphic and artistic, textual and semiotic, economic and ergometric. The various technologies, the complex processes of the material production, designing the copying according to aesthetic principles and functional needs, the inputs invested by scribes to make the hierarchical structure of the copied text transparent and to improve readability and usability, as well as the range of economic considerations and constraints that were part of the manual book-production and the hand-copying of the text – these manifold elements combined make this preindustrial object, the codex, one of the most complex products manufactured during the Middle Ages.\(^1\) There is no doubt that the production patterns of the codex and their regularity can be accredited with the rapid spread and the refining of the printing press during the second half of the fifteenth century, and with its revolutionary impact on the social and cultural history of European countries in general and of the Jewish people in particular.

This work does not deal with social and conceptual aspects of the history of the book or of the history of reading, apart from the detailed discussion of the unique circumstances of Hebrew book production in section 5 of the current chapter as well

\(^1\) Cf. the title of the article by C. Bozzolo et al., ‘Une machine au fonctionnement complexe: Le livre médiéval’, in Le texte et son inscription, ed. R. Lauffer, Paris 1989, p. 69.
as the discussion of the copyists’ involvement in the textual interpretation and reception of the texts (in chapter 8) and of their involvement in the editing of texts (in chapter 13). Only sparingly does it investigate the mutual interactions between author and text, between the copyist in charge of the text’s transparency and readability and the reader who used the text or the scholar who copied it for his own use, revising it, glossing it and otherwise altering it. Since the manual production of Hebrew books was an individual endeavour, the current work does not deal with the social networks engaged in book production and consumption, a topic intensively treated in recent years by scholars who study the history of the book in the printing era.

The copying of a book was first and foremost an act of physical manufacturing. A text which is inherently verbal may be transmitted through the mediation of the voice and of aural perception, namely as ‘oral transmission’, or visually, as ‘written transmission'. The visual embodiment of the text and the means for its storage, distribution and preservation are all material. Codices copied in the Hebrew script, as in other scripts, were therefore elaborate products, moulded by a rich variety of materials, techniques, and technologies. As such, they were designed in keeping with the aesthetic and functional principles and considerations which dictated visual regularity and uniform disposition of the text in the book’s openings. In the regions where Hebrew books were produced during the Middle Ages we witness an entire configuration of traditions, patterns, and practices which were preserved continuously for hundreds of years, remaining untouched by the substantial transformations in bookmaking practices that sprouted and prevailed in the host environment; along with them we can observe technological transformations and significant developments in the techniques of Hebrew book production and manuscript design which, as a rule, had taken place within Christian or Muslim societies at an earlier stage. The nature of these transformations can be gauged and their ergometric or economic determinants, or even elusive aesthetic reasons, uncovered or surmised, as can be considerations concerned with the level of the text’s readability and transparency, or with the scholastic needs of the educated elites.

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2 Compare Michel Foucault’s remarks about continuity and discontinuity in the methodology of history in his *Archeology of Knowledge*, tr. A.M. Sheridan, London 1972, pp. 21-30.


36
The diffusion of the codex and its late adoption by the Jews

A codex is composed of quires comprising a number of folded bifolia, which, after being sewn and bound, allowed easy leafing through the book. The diffusion of codex production in the regions around the Mediterranean basin and the gradual supplanting of the old scroll form were a product of both material and cultural factors. As a receptacle of texts the codex is more capacious, more durable and easier to use, to carry about and to store than the scroll. There is no doubt that the technological transition from scroll to codex left a revolutionary imprint on the cultural history of these regions. The Christians adopted the codex as early as the first centuries of the Common Era for the dissemination of their holy scriptures; after 300 C.E. the codex increasingly became the main book form used for Greek, Latin, and Coptic Christian texts. Gradually, the book form of classical non-Christian, so-called pagan literature, took in its turn the shape of the codex, until the scroll’s eventual disappearance in the sixth century C.E., when it no longer served as a vehicle for literary texts. The Jews, on the other hand, adopted the codex much later, not before the Muslim Period and the beginning of the Geonic literary activity, and presumably no earlier than the eighth century. This is attested to by the contextual uses of the word sefer (ספר) in talmudic and Midrashic literature as well as by the finds of books in Hebrew scripts, by literary testimonies and by the terms used for ‘codex’ in Hebrew sources.

Rashi (Solomon ben Yitsḥaq [1040-1050]) had already observed, in relation to the talmudic sources, that ספרים היו בימי חכמים כלל בניילון sefer tora (‘The books in the times of the Sages were all in the form of scrolls, like our Tora scroll’). An

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4 See Turner, Early Codex; Roberts & Skeat, Birth of the Codex, p. 75; I.M. Resnick, ‘The Codex in Early Jewish and Christian Communities’, The Journal of Religious History, 17 (1972–1973), pp. 1–17; M. McCormick, ‘The Birth of the Codex and the Apostolic Life-Style’, Scriptorium, 39 (1985), pp. 150–158; J. van Haelst, ‘Les origines du codex’, in Les débuts du codex – Actes de la journée d’étude organisée à Paris les 3 et 4 juillet 1985, ed. A. Blanchard (Bibliologia 9), Turnhout 1989, pp. 13–35. For a summary of the earlier literature, see C.C. Crown, ‘Codex and Roll in the NT’, Harvard Theological Review, 34 (1941), pp. 219–250. The transition from the scroll form to the codex more or less overlapped the transition from papyrus to parchment as writing material; however, the finds detailed by Turner show that the two transitions were not interdependent processes. Roberts & Skeat contend that the possibility that the papyrus codex and the parchment codex developed concurrently should not be discounted, and that in any case, the transition from papyrus to parchment was unrelated to the transition from the scroll to the codex (ibid., pp. 5-19).

5 Rashi on the Babylonian Talmud, Megilla, 19a, lemma ספטנש בוצמ יומנ. First cited by Blau, Althebräischen Buchwesen, p. 40, note 5. In A. Ahrend, Rashi’s Commentary on Tractate Megilla: A Critical Edition (based on the Pesaro printing of 1518), Jerusalem 2008 (in Hebrew), pp. 206, a parenthetical phrase was erroneously inserted ספרים היו בימי החכמים (והיו עשויין) כלל בניילון sefer tora (The editor remarks, ‘as in a number of witnesses and the Or Zarua’). See also the commentary on Megilla 5b, on the words ‘ל mesmo בניילון: למטרות ספרים (all their books were in the form of scrolls)’ (Ahrend edition, p. 149, and see the textual versions cited there). In Rashi’s commentary on Eruvin 97b, on the words 'לספרים יבשימים בין האישנות עשוין בניילון: זהו ספרי הקפידה'.
obscure and puzzling gap of some eight hundred years exists between the abundant finds of Hebrew books dating from the late antiquity (namely the Dead Sea Scrolls and the fragments from the Qumran caves and the Judaean Desert dating from the Hellenistic and early Roman period) and the earliest explicitly dated surviving Hebrew codices. From that period in time there is hardly any extant evidence of the Hebrew book, apart from a few dozen surviving fragments in Hebrew book-hand.\(^6\) Some of these remnants, most of which were inscribed on papyrus during the Byzantine period and discovered in archaeological excavations in Egypt together with Greek papyri, are documentary in nature and only a few are literary texts. Many of these papyri are written in Judaeo-Arabic\(^7\), and therefore they should undoubtedly be dated toward the end of the gap period, and perhaps even beyond it. Among the existing papyrus fragments that contained literary texts, not one can be proven to have derived from a codex.\(^8\) The late adoption of the codex form by Jews is also reflected in the late appearance of a term designating this form in Hebrew sources. In extant post-talmudic texts, this term is apparently mentioned in the ancient treatise \textit{Halakhot Pesuqot}, attributed to Yehudai Gaon, who served, in his old-age, as the head of the \textit{yeshiva} in the Babylonian town of Sura during the years 757-761. In the extant version of this text – which most likely was authored or written down by the disciples

\(^6\) All of the papyri and a few of the parchment fragments which were written during this gap – between the latest Judaean Desert scrolls and the earliest codices – were anthologized in one annotated corpus: Sirat, \textit{Papyrus}. An addition to this corpus is a papyrus of a fifth century ketubba: C. Sirat, P. Cauderlier, M. Dukan & M.A. Friedman, \textit{La Ketouba de Cologne: Un contrat de mariage juif à Antinoopolis} (Abhandlungen der rheinisch-westfälischen Akademie der Wissenschaften, Papyrologica Coloniensia 12), Opladen 1986, pp. 72ff.


\(^8\) The one exception is a papyrus codex of liturgical poetry (piyyutim) consisting of one multiple-bifolium quire which contained at least 24 bifolia (48 folios), in the manner of non-Hebrew codices during the first few hundred years of the codex’s use. However, this codex is not an early one, and is likely to have been produced in the eighth century; therefore it cannot disprove the assumption concerning the late adoption of the codex by the Jews. See Sirat, \textit{Papyrus}, pp. 69-82, and plate XVIII.
of Yehudai Gaon, who was blind, and under his supervision⁹ – the relevant passage mentioning the codex form is missing, but both the later Hebrew translation and adaptation of Halakhot Pesuqot, entitled Hilhhot Re’u and the treatise Halakhot Gedolot mention the term מִצְחַף (mitshaf or mutshaf),¹⁰ a loanword from Arabic.¹¹

This Arabic word was adopted as a proper Hebrew word and was used to designate a book in the form of a codex in ancient colophons and ownership notes in the tenth and early eleventh century¹² in the Middle East. Eventually it was also used in book-lists. Yet another term for codex – daftar (דפיר) – used in ancient colophons and ownership notes in the Orient,¹³ was borrowed from the Arabic of the early Muslim period.¹⁴

Another term designating a codex in Hebrew sources is a Hebrew neologism – mahzor. This term too appears in a number of colophons from the tenth century and the first half of the eleventh century and perhaps even earlier, and, like the other terms, was not long-lived.¹⁵

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⁹ See N. Danzig, Introduction to Halakhot Pesuqot with a Supplement to Halakhot Pesuqot, New York-Jerusalem, 1993 (in Hebrew), pp. 26-31. See Y. Brody’s review, ‘Melqar sifrut halalaka mi-tequfat haGe’onim’, Tarbiz, 64 (1994), pp. 139-152 (in Hebrew), in which he claims that the treatise attributed to Yehudai Gaon was authored outside of Babylonia, and does not at all represent his teachings (ibid., pp. 142-147).

¹⁰ See in detail Glatzer, ‘Aleppo’, pp. 260-261. Glatzer argues that indeed, the term מִצְחַף (mitshaf) appears in one of Yehudai Gaon’s abbreviated responsa concerning the same topic but that the word had been corrupted as מִצִּיפה. However, this speculation can be doubted. Danzig remarks that the term mitshaf, which does not appear in the original Halakhot pesuqot, was introduced in the Hebrew translation, entitled Hilhhot Re’u, in accordance with its appearance in the later book Halakhot gedolot. Cf. Danzig, ‘Ruling’, p. 338, note 152.

¹¹ Etymologically, the term mishaf in Arabic was derived from the term sahilja in the Qur’an, where it means ‘scroll’ (just as terms that designated a scroll in Greek and Latin were used to designate a codex after the transformation of the book form). See the article by Ory (below, n. 32), p. 88. See also J. Sadan, ‘On ”Torah” in the Middle Ages’, Jerusalem Studies in Jewish Thought, 2 (1983), p. 408, note 15 (in Hebrew).

¹² The term first appears in the colophon of the earliest non-fragmented dated codex whose date is ascertained, MS St. Petersburg Esp. I B3, Latter Prophets with Babylonian vocalisation, inscribed in 916 (see Codices hebraici, Part I, ms. 3). In the modern era, M.Z. Segal proposed that the term mishaf be used ‘especially for an exemplar of a handwritten book – a codex’ (‘He’arot’, Lešonenu, 1 [1928-1929], p. 321 (in Hebrew)).

¹³ The term first appears in a colophon dedicated to the owner in a manuscript containing what seemed to be the earliest date found in any Hebrew codex: a manuscript of the Prophets written allegedly by Moshe ben Asher, the Tiberian Masorete, in 894/5 (see Codices hebraici, Part I, ms. 1). In a book list from the Qayrawan mosque (copied in 1294, but based on a copy inscribed no later than 907 or 908), the terms daftar or sifr refer exclusively to books that are not Qur’ans, and it would seem that the term sifr was used to designate a bound book, while the daftar normally designated an unbound book. See A. Gacek, ‘The Ancient Si Jill of Qayrawan’, MELA Notes, 46 (Winter 1989), pp. 26–29.

¹⁴ This term originates in Greek, where it was used to designate a certain type of parchment, and it is used in this sense in talmudic literature (דיפתרא, רָבָנָן). See Lieberman, Hellenism, pp. 205-208. See also Encyclopedia of Islam, s.v. ‘Daftar’ by B. Lewis, vol. 2, Leiden–London 1965, cols. 77–81.

¹⁵ The term was explicitly used in the sense of a codex for the first time in 924 (see Codices hebraici, Part I, ms. 4). It also appears in the colophon of the Prophets manuscript written allegedly by Moshe ben Asher in 894/5. For the term, see Glatzer, ‘Aleppo’, p. 261-263.
Roberts and Skeat contend that the Jews, who wrote their scriptures on scrolls according to the dictates of Jewish law, were unlikely to replace them with codices. The Christians, on the other hand, did not refrain from adopting the revolutionary codex technology in order to propagate their holy writings. It may be that the desire to differentiate themselves from the Jews (and from the pagans of that era), who persisted in writing their scriptures on scrolls, was another reason for Christians to adopt the codex form, apart from its evident practical advantages. One may presume that the diffusion of the codex among the Christians elicited a counter-response from the Jews, who must have been reluctant to adopt this book form because of its associations with Christianity, and that they therefore adhered to the ancient form of the scroll for several more centuries in order to differentiate themselves from the Christians.

It is no wonder, then, that to-date no Hebrew codices have been found from the centuries, which elapsed between the latest scrolls found in the Judaean Desert and the earliest Hebrew codices. The earliest explicitly dated Hebrew codices, whose dates can be reliably ascertained; derive from as late as the beginning of the tenth century.

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16 Roberts & Skeat, Birth of the Codex, p. 60. Katz had already suggested that the use of the codex instead of scrolls by the early Christians was motivated by a desire to visibly distinguish Christianity from Judaism. See P. Katz, ‘The Early Christians’ Use of Codices instead of Rolls’, JTS, 46 (1945), pp. 63-65. Saul Lieberman argued that by adopting the codex the early Christians were imitating the Jews, as he believed that the transition from scroll to codex originated in a Jewish custom. His argument relies on the mention in the talmudic and Midrashic literature of the second half of the second century of another container of written texts other than the scroll, called פנקס (pinkas). See Lieberman, Hellenism, pp. 203-208. This loanword from Greek (πίνακας) was used to designate a device made of joined wooden plates, used for writing lists and accounts and known from archaeological finds and paintings of the Greco-Roman world. Even if we surmise that the pinax, which can be viewed as a sort of proto-codex, was in use by Palestinian Jews before it came to be used in the Roman world, the פנקס mentioned in the talmudic and Midrashic literature was in no way the forerunner of the codex but rather a variation of the scroll. As Menahem Haran correctly concluded from several descriptions of the פנקס mentioned in the Talmud and Midrash for metaphorical purposes, this was not the Roman pinax, whose plates were attached to one common axis and which might have been a precursor of the codex, but rather a concertina-like device used earlier among the Greeks. A pinax of that kind was made of concatenated slats, each attached at its end to the top of the next one by an axis. In this manner each slat was fastened to two axes, one at its top and the other at its bottom. See, M. Haran, ‘Codex, Pinax and Writing Slat’, in Studies in Memory of Abraham Wasserstein, vol. 1, ed. H.H. Cotton, J.J. Price & D.J. Wasserstein, [special issue, Scripta Classica Israelica, 15 (1996), pp. 212–222]. The use of this kind of pinax is also evidenced in visual representations of Babylonian, Aramaic, and Egyptian scribes in antiquity, and similarly by other finds. See, C. Sirat, ‘Le codex de bois’, in Les débuts du codex (above, n. 4), pp. 37–40.

17 I have not been able to find out whether the representations of the four evangelists holding a codex in their hands as against those of the Old Testament prophets (including Moses), who hold scrolls, as seen, for example, in the mosaics of the San Vitale basilica in Ravenna, Italy, are typical of Christian iconography of the Byzantine era and later, and whether they preserve and reflect this dichotomous book culture.
However, the analysis of the script and the identification of other markers of antiquity permit us to conclude that among the tens of thousands of Geniza fragments found in Fustat (ancient Cairo) - especially from the Ben Ezra synagogue of the Palestinian community – a small number of book fragments deriving from earlier periods were also preserved. At any rate, the earliest surviving manuscripts, mostly deriving from the Middle East, already demonstrate a mature and elaborate craftsmanship, a sophisticated and coherent technical tradition, as well as regular and transparent production practices, surely attesting to a long-established and continuous tradition of book-making and design, which predates the earliest extant codices.

This said, one nevertheless wonders why there have hardly been any finds of Hebrew scroll fragments from the time elapsed between the Judaean Desert scrolls and the earliest remains of codices, which must have not been produced before the ninth century, or possibly slightly earlier. Thousands of Latin manuscripts have survived from the same time period, as have many tens of thousands of Greek papyri, most of which were discovered in Egypt. No doubt, the lack of manuscript remains of post-biblical literature, designated 'oral literature', can be explained by assuming that until the Arab conquest, or until the beginning of the Geonic period, Hebrew literary creations were for the most part transmitted orally, at least till they reached their final

18 For the intricacy of establishing the authenticity of the date of the most ancient colophon – a manuscript of Prophets, which according to its colophon was copied in Tiberias in 894/5, see below, section 4, and in detail in *Codices hebraicus*, Part I, ms. 1.
19 Such as fragments of the Babylonian Talmud, the Mishna, Midrash, Bereshit Raba, and Yanai’s liturgical poems (piyyutim) in palimpsests (🤜넓ירמחוק in the talmudic phrase, see e.g. Mishna, Avot 4:20, and elsewhere), inscribed on folios from Christian manuscripts which had originally been written in Palestinian Christian Aramaic, in Greek, or in Syriac. See M. Sokoloff & J. Yahalom, ‘Christian Palimpsests from the Cairo Geniza’, Revue d’histoire des textes, 8 (1978), pp. 109–32; *The Christian Palestinian Aramaic Old Testament and Apocrypha Version from the Early Period*, ed. C. Müller-Kessler & M. Sokoloff, Groningen 1997. It is possible that a number of Geniza fragments vocalised in the Babylonian or the Palestinian manner – vocalisations whose beginnings predate the Tiberian system – originate in codices written before the 10th century, such as some of the seventy fragments appended as a facsimile in Kahle’s article, P. Kahle, ‘Die hebräischen Bibelhandschriften aus Babylonien’, Zeitschrift für die alltestamentliche Wissenschaft, 46 (1928), pp. 113–137 (printed also as a separate publication, Giessen 1928). See also the following anthologies of reproductions: A collection of Mishnaic Geniza Fragments with Babylonian Vocalization, ed. Y. Yeivin, Jerusalem 1974 (in Hebrew); Qit’ei Geniza shel haMishna, Talmud, u-Midrash menaqqadim be-niqqud Erets-Yisrael, ed. N. Allony, Jerusalem 1973 (in Hebrew).
20 See the Hebrew introduction to *Codices hebraicus*, Part I, p. 15.
editing and perhaps even later. This oral transmission was used for the texts of the Mishna, Tosefta, the Talmuds, Midreshei Halakha, the earliest Midrashim, and perhaps other texts as well - such as the earliest stratum of the mystical Heikhalot literature, as well as treatises from the Apocrypha and apocalyptic literature – which may have been composed originally in Hebrew. This view is nowadays one of the cornerstones of talmudic literature research, and it is confirmed by the explicit testimony of the Geonim that even though the talmudic text had already been put into writing its oral transmission had been persevered during their own lifetime. This view is similarly confirmed by the textual evidence derived from the talmudic literature itself, whether through their literary patterns or through their textual criticism. The notion that תורת שביעל-פם (“Oral Law”), even when committed to writing for archival purposes ought to be disseminated to the public through recitation (assuming perhaps, as did the Greeks, that oral transmission and repetitive recitation would reduce potential corruptions of the text caused by the copying mechanism) may be counted as another possible reason for avoiding the codex form. The continued use of the scroll, which made searching very cumbersome, seems to have conformed to a reality in which putting a text in writing was either prohibited or strictly limited to a small number of copies, so as to monitor the text and preserve it. The adoption of the codex

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22 Yaakov Sussmann has recently discussed this basis for understanding the transmission of talmudic literature, summarizing and analysing the various views presented in the broad research literature in a comprehensive article, see Y. Sussmann, “"Torah she-be-"al-pe" peshuta ke-mashmu’a: koho shel qotso shel yod”, in Meh Korei Talmud: talmudic Studies Dedicated to the Memory of Professor Ephraim E. Urbach, ed. Y. Sussmann & D. Rosenthal (Talmudic Studies 3), Jerusalem 2005, pp. 209-384 (in Hebrew). Sussmann was able to furnish many new evidences to validate the view, already put forward by Löw And Blau (and even Rashi!), that the oral law had not been in writing during the times of the talmudic Sages, and almost all reference to books referred in fact to the holy scriptures, i.e., the books of the Hebrew Bible (which, of course, were written on scrolls). Sussman concludes that the gradual transition from oral to written literature occurred during the period between the times of the Mishna and Talmud and the Geonic period (between the fifth and eighth centuries), about which we have very little knowledge. It is safe to assume that in those times of duress for the Jews, a time of political and cultural upheavals, when the existence of the Tora of the Jews was in real danger, there arose a need to guarantee the preservation of the oral law, so that it would not be forgotten. Slowly, and having no other choice, the rabbinic scholars permitted themselves to put into writing all that had been carefully preserved in a long chain of transmission’ (trans. I.G) (ibid., p. 324).

23 It is not unlikely that the reasoning behind the preference for oral transmission was similar to that put forward in the famous critique of the invention of writing that Socrates attributed to the King of Egypt (Plato, Phaedrus, 274–275). According to this story, learning how to write would lead to forgetfulness, for by relying on writing people would stop using their memories; they would not retrieve their knowledge from within, but through the mediation of external signs. For references to literature discussing this story, see M.T. Clanchy, From Memory to Written Record: England 1088–1307, Cambridge, Mass. 1979, p. 233.
by the Jews could take place only after the attitude towards text dissemination had changed, and after the shift from oral to visual transmission.24

Our hypothesis, based on the earliest codices that were found, that the use of the codex emerged not before the eighth century, is consistent with literary testimonies from the Geonic period about eighth-century copies of the Mishna and Talmud, and explicitly from the late eighth - and early ninth century.25 And yet, the well-grounded assumption that Hebrew literature was transmitted mostly in oral form cannot explain the near absolute absence of remains of Tora scrolls, which undoubtedly were written and consumed on a large scale. This absence indicates that the great paucity of remains of Hebrew handwritten texts during this long, obscure period cannot be attributed to oral transmission alone. It may be that particular material and political circumstances, which had not been the lot of consumers of Greek, Coptic, and Latin texts, led to the loss of Hebrew books remains. Indeed, the one surviving text to date of a literary scroll that predates the 8th century – portions of the Yom Kippur liturgy and piyyutim – survived due to its re-use in Latin manuscripts in Europe. At first, this liturgical scroll was cut into folios for the purpose of inscribing a Latin text over the Hebrew text (a palimpsest) at the Bobbio Abbey in northern Italy in the early eighth century. Subsequently, these same folios were cut and inserted as protective flyleaves into a later Latin codex.26

25 See Sussmann, ‘“Torah she-be-‘al-pe” peshuta ke-mashma’a’ (above, n. 22), pp. 297-298, 325-327, 330 (note 32). David Rosenthal has noted the most ancient indirect evidences for the existence of manuscripts of oral law, which may point to the existence of written copies of the Talmud in the eighth century. According to his analysis of the text in the Babylonian Talmud, Avoda Zara, 9a, he suggests that one may conclude that a written Talmud existed already in 688. See D. Rosenthal, Mishna Avoda Zara – Mahadura bigorit u-mavo ’, Jerusalem 1981, [Introductory volume], p. 96-106 (in Hebrew). For our purposes, it would obviously be impossible to deduce whether these evidences point to the existence of codices or of scrolls. However, Sussmann (op. cit. p. 330, note 32) emphasises once more Maimonides’ words in Mishne Tora (Hilkhot Malve ve-Love 15:2) mentioning תלמוד ישן כתוב על הגוילים כמו היו 쓰는 прежде בקרוב חמש מאות שנה (‘an old Talmud on scrolls such as were written before current times, five hundred years ago’). Maimonides’ estimate may not have been far from the actual production of that Talmud, which was still written on scrolls. See also the responsum by Rav Sherira Gaon, from 988, on ‘books of Tractate Nidda written more than two hundred years ago’, Newly Discovered Responsa, ed. S. Emmanuel, Jerusalem 1995, p. 159, section 118 (in Hebrew); S. Emmanuel, ‘Teshuvat Rav Shmuel ben Eli Ge’on Baghdad le-hakhmei Tsarfat’, Tarbiz, 66 (1997), p. 96, note. 11 (in Hebrew).
The rotulus
A rather large number of scroll fragments containing literary, liturgical, Midrashic, and exegetical texts were uncovered in the Fustat Geniza. Only a few were traditional horizontal scrolls, of the kind of the Munich palimpsest, indicating that the scroll did not disappear entirely once the Jewish copyists adopted the codex book-form.²⁷ Most of these remains were found to be fragments of scrolls rolled and unfurled vertically and inscribed in one long and continuous vertical column.²⁸

Scrolls of this kind were well known already in Antiquity and, as evidenced by Pharaonic, Ptolemaic, Hellenistic, and Roman papyri in Egypt, were used exclusively for documentary purposes, as they were to a large extent later, in the early Middle Ages.²⁹ This type of scroll is mentioned in the Mishna, in the Tosefta, and in both Babylonian and Palestinian Talmuds, and was designated by a special Hebrew term that well described it – תכריך (takhrikh, rotulus): תכריך של שטרות (takhrikh shel shetarot, rotulus of deeds), or תכריך של ברכות (takhrikh shel berakhot, rotulus of benedictions, indicating a scroll containing literary materials). The Babylonian Talmud, Bava Metsi’a 20b explains the nature of the תכריך של שטרות mentioned in the Mishna, Bava Metsi’a 1:8.

²⁷ The most impressive horizontal scroll in terms of size, state of preservation, and script is a fragment, MS Cambridge Misc. 25.53.17, which contains the Babylonian Talmud Hulin, 101a–105a. See S. Friedman, ‘An Ancient Scroll Fragment (B. Hulin 101a–105a) and the Rediscovery of the Babylonian Branch of Tannaitic Hebrew’, JQR, 86 (1995), pp. 20–46.
²⁹ Two Byzantine vertical scrolls containing an unknown commentary on the books of Ezekiel and the Minor Prophets, and interspersed with Greek words and phrases in Hebrew transliteration have been published and studied: MS Jerusalem 4° 577.7/1 and MSS Cambridge 32.1, K27.46, F2(1).211, T–S C2.87 (the fragments of the long scroll), K27.47, T–S K25.288 (the fragments of the short scroll). The text in both scrolls is continuous and written on both sides of the parchment by the same hand. For the plates, see, N.R.M. De Lange, Greek Jewish Texts from the Cairo Genizah (Texte und Studien zum antiken Judentum 51), Tübingen 1966, pp. 402–449; for the physical description of the scrolls, see, ibid. pp. 165, 294.
According to the cited baraita (‘external’, non-codified Mishnaic source) of Rabbi Hiyya, a rotilus contains documents that are glued to one another top to bottom, then rolled in the manner of a scroll, whereas an aguda (aguda) contains several deeds stacked one on top of the other, then rolled.30 The remains of later Hebrew books in the form of vertical scrolls, called in Latin sources transversa charta and in recent times named rotulus, plural rotuli, corresponds to the late adoption of this book form in ninth-century Greek and Latin Byzantine liturgies31 as well as in copies of the Qur’an, as in the finds from the Damascus Geniza.32 In recent years hundreds of vertical fragmented scrolls from the collections of the Fustat Geniza are

30 The version cited here is that of MS Hamburg 165 (according to the Sol and Henkind Talmud Text Databank at the Saul Lieberman Institute). For a different version in the Tosefta, see S. Lieberman, Tosefta ki-fesḥutah: a comprehensive commentary on the Tosefta, vol. 9, Neziqin, New York, 1955, p. 150. In Tosefta Shabbat 13:4 and in the Babylonian Talmud Shabbat 115b the version appears. Surely, the Greco-Roman term τομος = tomos does not indicate ‘codex’, but rather ‘scroll’, as was its usage in antiquity. Saul Lieberman’s commentary implies that this was not a horizontal butt rather a vertical scroll. See Tosefta, ed. S. Lieberman, Seder Moed, New York, 1962, p. 58; Seder Neziqin New York, 1988, p. 49. See also, S. Lieberman, Hellenism, p. 303, n. 30; S. Lieberman, Tosefta ki-fesḥutah, vol. 3: Seder Moed, New York, 1962, p. 206. Shlomo Naeh has disputed this interpretation, claiming that both tomos and rotulus as described in the Babylonian Talmud, Bava Metsi’a denote the way in which deeds had been preserved, glued to one another to form a horizontal scroll rather than a rotulus. In his view, both tomos and rotulus are generic terms for papyrus scrolls. See S. Naeh, in Sha’arei Lashon: Studies in Hebrew, Aramaic and Jewish languages Presented to Moshe Bar-Asher, eds., A. Maman, S. Lieberman, S. E. Fassberg and Y. Breuer, vol. 2 (Rabbinic Hebrew and Aramaic), Jerusalem 2007 (in Hebrew) pp. 250-253. Naeh (ibid., p. 251) attempted to substantiate his theory with the finds of Judaean Desert documents which were glued along their sides, ignoring his own earlier mention of the existence of many tied deeds from the Judaean Desert which lines were inscribed throughout the full length of the papyrus scroll, and were unfurled vertically (op. cit., p. 231-232). See also A. Sperber, A Dictionary of Greek and Latin Legal Terms in Rabbinic Literature, [Ramat Gan] 1984, pp. 98–99. A tomos of benedictions – טומוס של ברכות – is also mentioned in Tosefta Shabbat 13:4 (Lieberman edition, op. cit., p. 58): ...ברכות, היא ארבע שיטهام מתלילות עם ת//:טומוס של ברכות שבת, היום. The 13th-century Arabic gloss in the Jerusalem Talmud does not indi cate ‘codex’, but rather ‘scroll’, as also mentioned only once in the parallel recounting of the same episode in the Palestinian Talmud, Shabbat 16a (15c): ...ברכות ישיבא חלב וברכות ולוכד. As in the Sol and Henkind Talmud Text Databank at the Saul Lieberman Institute, the term rotulus is used for a roll of scrolls. See L.W. Daly, ‘Rotuli: Liturgy Rolls and Formal Documents’, Greek, Roman and Byzantine Studies, 14 (1973), pp. 333–338; G. Cavallo, Rotoli di Exulæt dell’Italia meridionale, Bari 1973; Exulæt: Rotoli liturgici del medioevo meridionale, ed. G. Cavallo 1994; A. Jacob, ‘Rouleaux grecs et latins dans l’Italie méridionale’, in Hoffmann (ed.), Codicologie comparée, pp. 96–97. Vertical scrolls in Greek and Latin were also produced later. See M. Maniaci, ‘The Liturgical Scroll between Orient and Occident: Ideas for a Comparative Study’, Comparative Oriental Manuscript Studies Newsletter, 2 (European Science Foundation, Research Networking Programme 2), (July 2011), pp. 16–21.


32 S. Ory, ‘Un nouveau type de mushaf: Inventaire des corans en rouleaux de provenance damasquine conservés à Istanbul’, Revue des études islamiques, 33 (1965), pp. 87–149; J. Sourdell-Thomine & D. Sourdelle, ‘A propos des documents de la grande mosquée de Damas conservés à Istanbul’, ibid., pp. 73–85. According to the plates appended to the articles, one can see that indeed these are rotuli. According to Prof. François Déroche of Paris, the script of the Qur’an scrolls is not similar to the early types of script of the first centuries of Islam (personal communication).
being uncovered by Judith Olszowy-Schlanger, after Gideon Bohak drew her attention to the many rotuli he had come across while examining Geniza fragments, in search of magical texts.33 Around half of these scrolls were made by piecing together parchment sheets, and half by assembling paper sheets. It appears that the use of this book-form was quite widespread. It overlapped with the early manifestations of the codex, but continued to be used at least until the eleventh century. According to Olszowy-Schlanger, this type of scroll was common mainly in Egypt during the eleventh century, and its remains include a large variety of texts: about half are liturgical (containing piyyutim and some prayers), while the rest include Babylonian Talmud treatises, halakhic literature, haftarot and anthologies of biblical verses, as well as dictionaries and glossaries of medicine and magic. About half of the rotuli were copied on the blank sides of pieces which had been cut off from written documents (some of them Arabic) and stitched together. The sizes of the assembled pieces are not uniform, their width is narrow and their length varies. The shapes and character of the rotuli in Hebrew script suggest, as inferred by Judith Olszowy-Schlanger, that many had served as some kind of personal notebooks. These had been copied and produced by their users – rabbis, scholars, physicians and magicians – for personal and professional use, being low cost and conveniently portable items. Vertical rotuli, whether both in Greek, Latin, and Arabic or in Hebrew script, which were still being made during the eleventh century undermine the assumption that they represent a transitional phase between the traditional scroll and the codex. The dating of some may indicate that their production began during the transition period between the traditional scroll and the codex, but apparently they were still being produced long after the emergence of the codex. The fragments of rotuli found and investigated by Judith Olszowy-Schlanger are compiled in her forthcoming book. The ongoing probing into these documents will no doubt shed light on the usage of this book form and its circumstances.

2. Codicology – its development, its new approach to the study of the hand-produced book, its trends

The term ‘codicology’, designating the scientific study of books in the form of a codex from a variety of perspectives (material, technical, technological, scribal, design, functional, intellectual, and social), was coined by François Masai in 1950 in his pivotal article ‘Paléographie et codicologie’, published in Scriptorium, a journal which he had founded in Brussels a few years earlier, specialising in the study of Occidental manuscripts. This article is regarded as the cornerstone of the young discipline, which later developed and expanded. Masai defined codicology as the archaeology of the manuscript, an autonomous field of research dealing with the material and technical aspects of codex production, alongside palaeography, which deals with scripts. Recognition of the importance of investigating the material and technical aspects of the Latin manuscripts – besides the history and typology of their scripts, which traditional palaeography saw as its own purpose – had become increasingly widespread as from the last decades of the nineteenth century. During the 1940's and 1950's, scholars began to investigate the various codicological

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34 Denis Muzerelle, a key figure of quantitative codicology, has composed a highly informative historical survey on the development of codicology and the various approaches to it, to which the current review is much indebted. See, D. Muzerelle, 'Le progrès en codicologie', in Rationalisierung der Buchherstellung im Mittelalter und in der frühen Neuzeit – Ergebnisse eines buchgeschichtlichen Seminars, Wolfenbüttel, 12–14 November 1990, ed. P. Rück & M. Boghardt (Elementa diplomatica 2), Marburg an der Lahn 1994, pp. 33–40. Since the publication of Muzerelle’s work, Gumbert has published his own survey, ‘Fifty years of Codicology’, which assisted me greatly in my own review. For the methodology of codicology in general and that of quantitative codicology in particular, see Derolez, Codicologie, i, pp. 7-10; see also his review of the role of codicology in Medieval Studies, A. Derolez, ‘La codicologie et les études médiévales’, in Bilan et perspectives des études médiévales en Europe – Actes du premier congrès européen d'études médiévales, Spoleto, 27–29 mai 1995, ed. J. Hamesse (Fédération internationale des instituts des études médiévales: Textes et études du moyen âge 3), Louvain-La-Neuve 1995, pp. 371–386. See also my review in the Hebrew introduction to Manuscrits médiévaux, Part I, pp. ix-x, and the overview lectures presented at the Jubilee meetings of the Comité International de Paléographie Latine (Engine 2003), which were printed in Archiv für Diplomatik, Schriftgeschichte, Siegel- und Wappenkunde, 50 (2004), pp. 205–580.


36 Masai highly commended Batteli’s approach, which shifted the gravity centre of palaeography from script to book (G. Battelli, Lezione di paleografia, Vatican City 1936), as well as the similar approach put forth by Dain (A. Dain, Les manuscrits, Paris 1936), who had indeed coined the term codicologie before Masai, but attributed a different meaning to it (ibid., pp. 76-78).

37 Another source for our brief discussion here is Julian Brown’s instructive review of the evolvement of the recognition of the importance of the material aspects of manuscripts, as evidenced in the field of Latin palaeography before the emergence of codicology as an independent research field. See, T.J. Brown, ‘Latin Palaeography since Traube’, Transactions of the Cambridge Bibliographical Society, 3 (1959/60), pp. 361–381 [=Codicologica (above, n. 34), pp. 58–74]. This review is also included in his collected writings: Brown, A Palaeographer's View, pp. 17-37. Brown uncovers the roots of the approach that ultimately gave birth to the discipline of codicology. On the German term Handschriftenkunde, coined by Ebert as early as 1825, see J.P. Gumbert, ‘Ebert’s Codicology a Hundred and Fifty Years Old’, Quaerendo, 5 (1975), pp. 336–339.
elements, especially pricking and ruling, not by means of theoretical speculation but by examining the writing styles used in scriptoria, thereby discovering that these elements had both local and temporal characteristics. Subsequently, scholars dealing with Latin and Greek manuscripts began to examine larger assemblages of the manuscripts’ external characteristics, and discovered that these were shared by groups of the same provenance and time.\textsuperscript{38}

Masai did not define codicology as an historical discipline, yet while proclaiming its independence he subordinated it to the palaeographers, philologists, and art historians as a mere auxiliary provider of information. His approach, which has its supporters to this very day, confined the archaeology of the codex to the single, unique manuscript, having no concern with manuscript populations.

In what concerns the still ongoing debate about the status of material codicology in relation to traditional palaeography and the appropriate terminology for each of these two aspects of the handwritten and handmade book, my own view is that the term ‘codicology’ should be used to describe the comprehensive study of all aspects of the codex form, while the old term ‘palaeography’ – the study of scripts – should refer to the study of one aspect only. Either way, codicology does not regard manuscripts as receptacles designed solely for the transmission and preservation of texts, but also as sophisticated products deserving to be researched in their own right as part of the cultural and social history of the Middle Ages.

During the early 1980's the young discipline underwent a methodological turn of great impact, which in fact transformed it as well as its research. In 1980, Carla Bozzoli and Ezio Ornato published a study entitled \textit{Pour une histoire du livre manuscrit au Moyen Age: Trois essais de codicologie quantitative}, which became the cornerstone of the school of quantitative codicology\textsuperscript{39} under the leadership of Ornato, who established its

\textsuperscript{38} The first example of a comprehensive codicological study is, apparently, Ker’s book on English manuscripts after the Norman Conquest, in which he exposed the salient transformations brought about by the conquest in pricking and ruling techniques, in layout types, and in systems for numbering the quires and in marking their sequence. See N.R. Ker, \textit{English Manuscripts in the Century after the Norman Conquest}, Oxford 1960. Even before that, in 1958-1959, Irigoin was able, on a more limited scale, to demonstrate the tremendous value of codicological research of manuscript groups, with his findings of shared characteristics in Greek manuscripts produced in the same production centre. See Irigoin, ‘Centres de copie byzantins’. The most unyielding call to engage in every aspect of manuscript research was formulated by Delaissé, the art historian; see L.M.J. Delaissé, ‘Towards a History of the Mediaeval book’, in \textit{Miscellanea André Combes}, vol. 2 (Cathedra Sancti Thomae Pontificiae Universitatis Lateranensis 4), Rome 1967, pp. 27–39 [\textit{=Codicologica} \textsuperscript{(above, n. 34)}, pp. 75–83].

\textsuperscript{39} For the quantitative approach in the study of history, which, in fact, does not directly relate to codicological research but is nonetheless useful in terms of statistical procedures and terminology, see
theoretical foundations. Quantitative codicology adopted positivistic methods - experimental (according to the usage of this term in the social sciences), and empirical. It called for the collecting of measurable data from as many manuscripts as possible, so as to enable their investigation from a variety of angles in order to unveil their typology; at the same time it promoted the approach that regarded the hand-produced book not as an individual item, but as a member of a group, viewing manuscripts as a population. The collective codicology approach comprehends all the phases and the aspects of the history of the handwritten book – from its making and its production processes, the copying of the text and improving its readability by scribal means, the design of the book openings and their ornamentation, and up to its distribution, reception, preservation, and subsequent transformations. In their theoretical studies, Ornato and his colleagues attempted to spot the technological, functional, economic, social, and intellectual factors that brought about the evolutionary processes manifested in the history of medieval book production. In so doing they transformed a traditionally auxiliary field into a historical discipline designed to expose the ‘conditioned functional evolution’ of the hand-produced book.

In 1982, a group of codicologists, partisans of the quantitative and collective school, founded a bi-annual journal entitled Gazette du livre médiéval, which promoted the quantitative and historical approach and at the same time supplies classified bibliography. In 1984 Albert Derolez, the first Latin codicologist-palaeographer who pointed out the need to establish a synchronic and diachronic typology, published his study of the Humanistic parchment manuscripts produced in Italy. This was the first comprehensive codicological research based on a large corpus of Latin manuscripts (one thousand and two hundred codices), examined by the researcher himself, who thoroughly exhausted in a detailed manner a number of material and technical codicological parameters. This said, Derolez’s corpus was monolithic and included manuscripts of one group and one genre only. The corpus of manuscripts on which we founded our own tentative typology, presented as early as 1977, comprised at that
time some two thousand manuscripts produced in different regions during different times, and included a number of additional codicological parameters as well.\textsuperscript{43}

In fact, the Hebrew Palaeography Project\textsuperscript{44} had from the time of its founding in 1965 based its research on a quantitative approach, substantiating this methodology through the comprehensive documentation of the vast majority of dated manuscripts, serving as a basis and framework for unveiling the typologies of the codex in all scripts,\textsuperscript{45} albeit without establishing theoretical framework. Our approach assumed that the research aimed at bringing to light the evolution of the codex should be carried out only after an exhaustive field-research, the documentation of most of the dated witnesses and the exposure of the typology arising from these data.\textsuperscript{46} Therefore, both practically and operatively, Hebrew codicology preceded Latin (and Greek) codicology in employing the quantitative and collective - or sociological - research method.

3. Hebrew Codicology

The codicological investigation of Hebrew manuscripts commenced around the time when the codicological study of manuscripts in the Latin and Greek scripts began, namely as soon as the Hebrew Palaeography Project was founded in 1965 under the sponsorship of the Israel Academy of Sciences and Humanities in Jerusalem, and the Institut de la Recherche et d'Histoire des Textes [IRHT], Centre National de la Recherche Scientifique [CNRS] in Paris. And yet, in reviewing the brief history of Hebrew codicology and palaeography one must not overlook their history, before their formation according to the modern, multi-faceted approach. As a research field involved with all aspects of handwritten texts in the codex form, Hebrew codicology could not have developed and attained its achievements before the emergence and evolution of the codicology of Occidental manuscripts: already the early humanists in

\textsuperscript{43} Beit-Arié, Hebrew Codicology.
\textsuperscript{44} See preface, above.
\textsuperscript{45} In this context one should consider Piper’s reservations regarding the extent to which the dated manuscripts are representative, put forth by him in his review of the 1979 catalogue of dated Latin manuscripts in the British Museum. He argued that since explicitly dated manuscripts were the exception, they may well display other unusual characteristics. Scribes who marked the date of copying in their colophon would also tend also to disclose their names and to express their individuality in their penmanship, while unnamed scribes would do so to a lesser degree, and therefore their copies should be regarded as more representative of their time and place. See A.J. Piper, Medium Ævum, 50 (1981), pp. 105–106, review of A.G. Watson, Catalogue of Dated and Datable Manuscripts c. 700–1600 in the Department of Manuscripts in the British library, London 1979.
\textsuperscript{46} Beit-Arié, ‘History of Production’; Beit-Arié, Unveiled Faces.
Renaissance Italy had started their inquiries into the textual criticism of manuscripts, while palaeographical analysis was first undertaken not before the eighteenth century. The first occurrence of the textual criticism of manuscripts as authentic sources of Hebrew texts took place in the framework of the early Wissenschaft des Judenthums movement, י侉כмат ירואנלב, during the first half of the nineteenth century, and in the pioneering investigations of its founder, Leopold Zunz. The study of manuscripts was greatly amplified in the monumental bibliographical undertakings of Moshe (Moritz) Steinschneider. Not only did he examine, describe, catalogue, and classify many hundreds of manuscripts in the European collections and in England, but he also noticed and commented upon some of their material characteristics and on the scribal traditions of their copyists, devoting to these issues a book (M. Steinschneider, Vorlesungen über die Kunde hebräischer Handschriften, deren Sammlungen und Verzeichnisse, Leipzig 1897), which still serves as an general introduction to the field of Hebrew manuscripts. In his introduction, Steinschneider briefly summarised the information about Hebrew manuscripts contained in books and articles published before his time; prior to that he had published a more comprehensive review of such sources relating to Hebrew palaeography: ‘Zur Literatur der hebräischen Palaeographie’, Centralblatt für Bibliothekwesen, 4 (1887), pp. 165–155. A work by Emmanuel Löw (L. Löw, Graphische Requisiten und Erzeugnisse bei den Juden, Leipzig 1870) dealt with writing and books in the talmudic sources and in medieval halakhic literature. A book by Ludwig Blau (L. Blau, Studien zum althebräischen Buchwesen und zur biblischen Litteraturgeschichte, Strasbourg 1902) was devoted to the material embodiment of the biblical text, and its textual implications. The pioneering work of Carlo Bernheimer (C. Bernheimer Paleografia ebraica, Florence 1924), in Italian, was the first to present a typology, albeit merely a synchronic one, of the Hebrew scripts that were used in medieval manuscripts, based on a selection of manuscripts in Italian libraries. The codicological aspects that were included in this work were basic, yet some proved to be of great value (such as the classification of biblical manuscripts by their formats and the number of columns and their regional characterisation according to these criteria). Particularly praiseworthy is his farsighted methodological statement that for a correct characterisation of the external attributes of the manuscripts it is imperative to collect statistical data from a large number of manuscripts. The pioneering work of Shlomo Birnbaum, (S.A. Birnbaum, The Hebrew Scripts, vols.1–2, London–Leiden 1954–1971) was devoted entirely to the
diachronic typology of Hebrew scripts, from the ancient Hebrew scripts until the mid-twentieth century.

One should, of course, mention in the context of this brief review the late-nineteenth century to mid-twentieth century catalogues of manuscript collections which descriptions – apart from providing the most detailed and erudite presentations of the manuscripts’ contents, the definition of their types of scripts and even their estimated dating – comprise at the same time, some basic codicological aspects. Particularly noteworthy are three of these catalogue authors, whose own praxis anticipated the theoretical formulations of theories concerning the vital importance of material aspects for the textual research. The first was George Margoliouth, whose catalogue of the Hebrew manuscript collection in the British Museum (G. Margoliouth, *Catalogue of the Hebrew and Samaritan Manuscripts in the British Museum*, vols. 1–3, London 1899–1915) includes information about the manuscript’s dimensions, the number of written lines, the composition and number of the quires as well as the devices ensuring their order. He moreover excelled at distinguishing meticulously between the components elements of the codex (as had done before him Adolf Neubauer in his catalogue of the University of Oxford’s manuscripts [A. Neubauer, *Catalogue of the Hebrew Manuscripts in the Bodleian Library and in the College Libraries of Oxford*, vol. 1, Oxford 1886] and by M. Steinschneider, whose catalogues distinguished between the codex components by defining script types). Second to him was Zacharias Schwarz, who created the detailed and exemplary catalogue of the Austrian National Library collection (A.Z. Schwarz, *Die hebräischen Handschriften in der Nationalbibliothek in Wien*, Leipzig 1925) and similarly a catalogue of Hebrew manuscripts in Austria (A.Z. Schwarz, *Die hebräischen Handschriften in Österreich*, vol. 1, Leipzig 1931). Schwarz also identified the watermarks in the layers of manuscripts he described. Third, and most outstanding, was Moshe David (Umberto) Cassuto, who, in his Latin catalogue of one hundred and fifteen Hebrew manuscripts of the Vatican Library collection (U. Cassuto, *Codices vaticani hebraici*, [Vatican City] 1956), included many codicological and palaeographica features, together with a meticulous separation of the hands that had collaborated in the copying of the book.

Hebrew codicology, as well as this book, based on the documentation of visible characteristics, nearly all measurable and capable of being converted into quantitative records, as was undertaken by the Hebrew Palaeography Project in the vast majority
of explicitly dated manuscripts. These had been systematically tracked down in libraries and private collections around the world, based on published catalogues and lists, on research literature, and on the cataloguing undertaken at the Institute of Microfilmed Hebrew Manuscripts in the National and University Library (now National Library of Israel) in Jerusalem. In this framework we undertook the examination and documentation of nearly all of the extant dated Hebrew manuscripts in libraries in England, Italy, Russia, France, the United States, Israel, Germany, the Netherlands, Austria, Hungary, Switzerland, Denmark, Spain, Ireland, Egypt, and Belgium. Moreover, most undated manuscripts containing a mention or disclosing of the copyist's name were located: almost three-quarters of them were fully documented in situ in their respective libraries, while the rest were partially documented through microfilms. Nearly all the accessible dated extant manuscripts worldwide – almost 2,800 codices which have been thoroughly documented, and another 260 or so that have been partially documented, in addition to nearly 1,600 undated codices in which the name of the copyist was nonetheless stated or had been identified. Since the copying of each scribe who participates in the transcribing of multi-scribe codices was documented separately, the total number of the codicological records amounts to more than 4300, representing some 3850 codices, of which about 3150 are dated. All of the codicological, palaeographical, scribal, bibliographical, and textual information that were documented, including all colophons, were coded and converted into a computerised database, allowing retrieval of combinations of various codicological, numerical, textual and image data. This database also contains a selection of quality photographs from each manuscript. Moreover, it has an extremely complex updating and retrieval system developed especially for the needs of codicological research. Known as SfarData, our electronic database, with its sophisticated search possibilities, is for the present unique in the world, and represents a methodological breakthrough in what concerns the palaeographical and codicological research of the handwritten codex in all scripts. By means of this database one can have at hand the many tens of thousands data collected (seeing that the codicological variables alone number more than seven hundred for each codicological unit): one can thus classify and group them, perform complex cross-searches, heuristically investigate linkages, and unveil clusters, conditionings and dependencies, establish geo-chronological statistics and view them in graphs and charts, and ultimately set up a typology and characterisations structured on
quantitative and measurable foundations and on the reliable supporting shell made out of all the surviving Hebrew dated manuscripts. Moreover, the database itself and the retrieval software developed for it provide a most precise tool available for an identification of the time range and the area of any manuscript bearing no date and place of production: this by singling out all the dated manuscripts sharing the same combination of characteristics, and by comparing their scripts.\footnote{On the project, the database and earlier versions of the retrieval system see Beit-Arié, ‘SFARDATA’. See also the methods and terms of quantitative analysis set out by Jarash and Hardy (above, n. 39), which are in line with our own methodological premises and procedures, in regard to the characterisation and identification according to combinations of characteristics, e.g. discriminant function analysis (‘whether a set of variables can predict membership in a grouping of cases for which the groups are known a priori’, p. 182); multivariate statistics (three or more variables) (‘cluster analysis seek to group cases into clusters that are as nearly homogeneous as possible’, p. 180).}

We found that indeed, most of the codicological features of Hebrew manuscripts grouped according to typical regional traditions, some of them exclusive, some common to more than one region, and others are significantly time-relate as well. It has been possible to identify developments and transformations in production techniques and book design in the various regions, which warrant further examination in the attempt to uncover their ergometric, economic, and aesthetic determinants, or those related to text readability or transparency, or even to the scholarly needs of the educated elite.

As we proceeded with our work it became clear that the decision to document all the tangible features of material and textual production not only was entirely justified from the theoretical standpoint concerning the investigation of every facet of the codex; moreover, it was also necessary for practical reasons, given the special circumstances of the Jewish people during the Middle Ages, particularly in Europe. The expulsion of entire communities and entire populations and, on the one hand, the exile imposed on them by the ruling power as part of colonisation projects or, on the other hand, because of individual voluntary migrations for economic or intellectual motives, led to the blurring of distinctive script types and to the simultaneous cohabitation of several script cultures, especially in Italy and Palestine. Indeed, a fifth of all the dated units were found to have been written by immigrant copyists, who normally continued to employ the script they used in their countries of origin, while the codicological characteristics of the manuscripts they produced were, partly or entirely, typical of the area in which they were active. In certain areas and in certain
periods, the immigrant copyists constituted a majority among the overall number of copyists. In Italy, for example, between the end of the fourteenth century (after 1396, following the persecutions of 1391 in Spain and Provence) and the end of the fifteenth century, more than half of the numerous units produced there (comprising some two-thirds of all the dated Italian units before 1500 and more than forty percent of all the dated units surviving from all areas in this period) were copied in non-Italian scripts but rather in Sephardic scripts by immigrants from the Iberian peninsula and Provence (for the most) and in Ashkenazic scripts by immigrants from German lands. Obviously, given this reality, the validity of script type as a palaeographic criterion is undermined. Identifying the provenance of a manuscript cannot rely on the script type alone, but on the correlation between it and the codicological profile, which reflects the production zone; and, if the script type does not match the codicological profile, it can then testify as to the copyist’s origin.48 No doubt, this conclusion, arising from the research, is one of the central accomplishments of the multi-faceted and complex Hebrew codicology, both because of the broad expanse of the production zones of the Hebrew book in the Middle Ages, and because of the mobility of its producers.

48 For examples of manuscripts localised in the Orient and Italy and inscribed by immigrants who continued to employ the script of their country of origin for many years but whose book craft reflects entirely or at least partially - the practices of the region in which they were active, see Beit-Arié, Hebrew Codicology, pp. 104-109.

MS Oxford, Corpus Christi College 133 is to my mind the most instructive illustration of the problematic and complicated nature of Hebrew codicology and palaeography, due to the unique mobility of the Jewish people. This manuscript, inscribed in the early, square and semi-cursive Ashkenazic script, is a copy of a prayer book whose unique text version is presumably descended from the custom of French Jewry, used by the Jews of England before their expulsion in the twelfth century. On two pages which were left blank (fols. 349v and 350r) numerous records were added attesting to payments received from prominent Christians from all over England (be it Bath, Norwich, Exeter or Winchester), half of which had been identified as having been active at the end of the twelfth century. Most unexpectedly, the records — inscribed no doubt by a moneylender who was manuscript’s owners at around 1200 C.E. — were in Judaic-Arabic in a Sephardic (Andalusian) cursive script! The Sephardic owner of the prayer book noted that his records included (all that I own since being here in England). See Beit-Arié, Makkings, p. 138 (translation and transliteration of the document by Ephraim Wust), pp. 147-148 (plates of the records); Beit-Arié, England, appendix (identification of the local English notables by Zefira Anton-Rokéah).
Tables 1-3: Distribution of immigrant scripts

For the basis of the statistical calculations in this book, see in the introduction below the section titled ‘General statistics of the database’ (preceding Table 5).

Table 1: Regional distribution of records of the dated manuscripts records written in immigrant scripts until 1540

(1) Total immigrant scripts (2) Sefardic script (3) Ashkenazic script (4) Byzantine script (5) Italian (6) Oriental script (7) Yemenite script (8) Unidentified immigrant script

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total in corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Sefarad</td>
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<td>–</td>
<td>–</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ashkenaz</td>
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<td>1</td>
<td>3</td>
<td>1</td>
<td>–</td>
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</tr>
<tr>
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<td>165</td>
<td>15</td>
<td>16</td>
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<td>–</td>
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<td>76</td>
<td>23</td>
<td>2</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>4</td>
</tr>
<tr>
<td>Orient</td>
<td>55</td>
<td>13</td>
<td>36</td>
<td>8</td>
<td>3</td>
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<td>0</td>
</tr>
<tr>
<td>Unidentified</td>
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<td>73</td>
<td>12</td>
<td>36</td>
<td>7</td>
<td>21</td>
<td>4</td>
<td>12</td>
<td>1</td>
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<tr>
<td>Total</td>
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<td>434</td>
<td>14</td>
<td>179</td>
<td>6</td>
<td>26</td>
<td>0</td>
<td>5</td>
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</table>
Table 2: Regional distribution of records of the dated manuscripts written in immigrant scripts until 1492

(1) Total immigrant scripts  (2) Sefardic script  (3) Ashkenazic script  (4) Byzantine script  
(5) Italian script  (6) Oriental script  (7) Yemenite script  (8) Unidentified immigrant script

<table>
<thead>
<tr>
<th>zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total in Corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Sefarad</td>
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<td>1</td>
<td>-</td>
<td>-</td>
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<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ashkenaz</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Italy</td>
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<td>45</td>
<td>231</td>
<td>27</td>
<td>136</td>
<td>16</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Byzantium</td>
<td>40</td>
<td>16</td>
<td>36</td>
<td>14</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Orient</td>
<td>37</td>
<td>10</td>
<td>18</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>5</td>
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<td>1</td>
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<tr>
<td>Yemen</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unidentified</td>
<td>23</td>
<td>74</td>
<td>12</td>
<td>39</td>
<td>5</td>
<td>16</td>
<td>5</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>493</td>
<td>19</td>
<td>299</td>
<td>11</td>
<td>149</td>
<td>6</td>
<td>28</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 3: Records of dated manuscripts written in immigrant scripts in Italy between 1396 and 1500

(1) Immigrant script  (2) Sefardic script  (3) Ashkenazic script  (4) Byzantine script

<table>
<thead>
<tr>
<th>Period</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total in Corpus</th>
</tr>
</thead>
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<tr>
<td>1396-1410</td>
<td>48</td>
<td>35</td>
<td>10</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>1411-1425</td>
<td>23</td>
<td>13</td>
<td>8</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td>1426-1440</td>
<td>26</td>
<td>17</td>
<td>9</td>
<td>3</td>
<td>65</td>
</tr>
<tr>
<td>1441-1445</td>
<td>41</td>
<td>23</td>
<td>18</td>
<td>3</td>
<td>77</td>
</tr>
<tr>
<td>1456-1470</td>
<td>58</td>
<td>34</td>
<td>23</td>
<td>2</td>
<td>117</td>
</tr>
<tr>
<td>1471-1485</td>
<td>123</td>
<td>79</td>
<td>45</td>
<td>2</td>
<td>194</td>
</tr>
<tr>
<td>1486-1500</td>
<td>55</td>
<td>41</td>
<td>16</td>
<td>1</td>
<td>102</td>
</tr>
<tr>
<td>Total</td>
<td>374</td>
<td>242</td>
<td>126</td>
<td>18</td>
<td>710</td>
</tr>
</tbody>
</table>

Unlike European quantitative codicology, Hebrew codicology – although it, too, attributes primary importance to the typological and evolutionary study of the diverse populations of Hebrew manuscripts, produced in immensely widespread zones – does not refrain from dealing with operative and applied codicology. Moreover, Hebrew codicology frequently applies the results of its quantitative research in order to identify the date and provenance of single manuscripts. This has been done both in detailed monographs specific manuscripts published in facsimile editions \(^{49}\) and in catalogues of entire collections.\(^{50}\)

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\(^{50}\) See the new catalogues of the large and rich collections in the following libraries: the Bodleian Library at Oxford (Neubauer & Beit-Arié Catalogue), Biblioteca Palatina in Parma (Richler & Beit-Arié Catalogue [Parma]), and the Vatican Library (Richler & Beit-Arié Catalogue [Vatican]).
My own reliance on the skeletal data of the dated codices and their statistical classification in order to determine the synchronic and diachronic typology of the Hebrew handwritten book according to regions of production and in order to attempt identifying the provenance or estimating the time of production of undated or non-localised manuscripts, is not exempt from flaws and from some methodological problems which ought to be stressed and kept in mind. Evidently, these weaknesses are present in all manuscript typologies relying on the surviving dated manuscripts in any script. The basic fault concerns the extent to which the corpus of dated manuscripts is representative and valid. The corpus indeed includes nearly all extant and accessible dated manuscripts, and in this respect it is in fact total, exhaustive, and not sample-based, yet it comprises only a very small portion of all the extant manuscripts. Moreover, the number of manuscripts it includes is a tiny fraction of the number of manuscripts produced in the Middle Ages, most of which did not survive. Furthermore, the survival of the dated manuscripts is certainly accidental and most certainly does not reflect in any representative or balanced way those manuscripts which did not survive, nor even the extant ones, in respect to their chronological spread and geographical distribution. To what degree, then, does this corpus represent the multifaceted reality of the six hundred and fifty year-long history of the survival of the Hebrew codex? Such a view of the skeletal basis of documentation of all extant dated manuscripts turns our exhaustive corpus into a random and unrepresentative one. Are we entitled to retrieve a sound geochronological typology from such a random assemblage, despite its totality, even when relying on the most rigorous statistical processing methods? To which degree of certainty can we identify a manuscript that bears neither date nor indication of locality, relying on identical combinations of codicological characteristics in the corpus’ dated manuscripts?

51 It seems that the explicitly dated Syriac manuscripts that have survived since the time of the earliest dated codex (produced as early as 411), are greater in number than all dated codices in other scripts. Sebastian Brock estimated that the total number of Syriac manuscripts should be more than ten thousand, of which at least three thousand include a notation of date by the copyist. See, S.P. Brock, ‘The Art of the Scribe’, in The Hidden Pearl, ed. S.P. Brock, vol. 2, Rome 2001, p. 245; idem, ‘Some Basic Annotations to The Hidden Pearl: The Syrian Orthodox Church and Its Ancient Aramaic Heritage, I–III (Rome, 2001)’, Hugoye: Journal of Syriac Studies, 5/1 (2002), http://syrcom.cua.edu/Hugoye.

52 Denis Muzerelle has already written about the problem of the degree of representativeness of Latin (not necessarily dated) manuscripts and, generally, of surviving historical artefacts, see D.M. [=Denis Muzerelle], ‘De l’exhaustivité’, Gazette du livre médiéval, 1 (1982), pp. 15–17.
Another problem relates to the validity of characteristics which statistical classification shows not to be unique to one production zone, but to exist in minor or marginal rates, even to the degree of being atypical, in another zone or zones. Clearly, in such cases, considerations of probability hold little value for specific identification, for we cannot exclude the possibility that the undated and non-localised manuscript we seek to identify codicologically actually represents the marginal and even the exceptional manuscripts in our total yet random corpus. This said, we are certainly allowed to use massive incidences that are unique to a certain region or period for the purpose of collective characterization, both regional and chronological.

Another limitation of the use of the corpus of dated codices lies in the fact that only some forty-three percent of their colophons explicitly indicate the location in which the copy was made. In six percent of the manuscripts the copying location was estimated with a high degree of probability based on other manuscripts copied by the same scribe where a locality is indicated, or based on other sources. Although this proportion is high and, in comparison with Latin manuscripts, even very high – it still presents a severe methodological challenge. The geo-cultural zone of half of the remaining manuscripts (some fifty one percent) was with absolute certainty or with some reservations, based on the script and the profile of typical codicological characteristics. Sometimes these identifications are utterly solid; when, for instance, we know of other manuscripts copied by the same scribe, containing an indication of locality in the same region, or when the region where the person commissioning the manuscript dwelled is known from other sources, or on the basis of the liturgical rite. And yet, the identification of the production zone of codices bearing no indication of locality merely on the basis of codicological traits and the script type characteristic of a certain region, may, at times, be mistaken. Thus, the employment of a considerable portion of the corpus of dated manuscripts for the identification of the production zone of an uncolophoned manuscript might be trapped in vicious circle of an assumption based on another assumption. This methodological trap can easily be avoided if we restrict the skeleton of our typology – at least at the first stage of identification – and deduct from it the non-localised manuscripts, with the exception of

53 On colophons, see below, chapter 2.
54 Of course, there are significant differences in this respect between different production zones. In France and Germany, the percentage of colophons that include an indication of locality as well as a date is extremely low. See below, chapter 2, section 4.
those which can be localised with certainty based on the kind of solid data described above.

Despite the limitations owing to the accidental and scant representativeness of the corpus of dated manuscripts vis-a-vis all of the codices produced in the Middle Ages, we may confidently identify the provenance of a manuscript or estimate its date according to a codicological practice, when this practice is exclusive to a certain region or period; and we can even grant such a finding the status of a “rule”, especially when the number of manuscripts which attest to it is large. Surely we are entitled to do so when such regional and chronological exclusiveness is found in shared combinations of codicological practices, and we can of course rely on such clear-cut data to establish the typology. Employing heuristic procedures of trial and error and of substitution and elimination when crosschecking practices and combinations thereof in the attempt to characterise manuscript populations and identify an individual manuscript could significantly minimise the limitations of the skeletal corpus of extant dated manuscripts. In any event, it is only these manuscripts that are capable of helping us systematically and accurately reveal whatever may be uncovered from the multifaceted history of the medieval Hebrew book.

But above all, and beyond the methodological problems, the elusive question for every scientific inquiry resounds loudly also in the world of general and Hebrew codicology – “Why?” Why was the method of processing parchment in Germany and France totally transformed in mid-thirteenth century? Why was the method of ruling in Italy replaced in the 1420’s? Why did a cursive script develop in Muslim countries much earlier than it developed in Christian lands? How did such similar scribal and bookmaking traditions become consolidated in such far-flung regions, under the uniquely individual circumstances of the production of the Hebrew book? Questions of this kind are perhaps the most interesting ones.55

4. Extant manuscripts, geo-cultural distribution of codicological practices and types of book script

Findings of the surviving manuscripts
The number of Hebrew manuscripts and fragments that have survived since the mid- and late Middle Ages – from the beginning of the tenth century and until the end of

55 I have addressed some of these questions and others and attempted to propose answers. See Beit-Arié, Unveiled Faces.
the fifteenth century – may be as high as one-hundred thousand; this includes complete or partial codices, as well as many small codex fragments. The number of complete or partial manuscripts kept in hundreds of national, municipal, university, ecclesiastic, and private libraries\textsuperscript{56} may be estimated as at least sixty thousand, if one counts each codicological unit separately, in those cases where production units from different times and regions were bound together, as was commonly done with Hebrew codices in their various permutations over time. It is more difficult to estimate the number of remains of codices from among the many tens of thousands of fragments we possess, especially fragments from the great Geniza in the Ben Ezra synagogue of Fustat (ancient Cairo), and in other Genizas there and elsewhere, as well as fragments kept in European libraries (which to this day have only been partially uncovered, and are now being brought to light in great numbers in several European countries, and especially in Germany); such dismembered fragments were put into secondary use in the bindings of Latin manuscripts (several thousands of such fragments, which were used as soft covers for registers were discovered in Italian archives).\textsuperscript{57} Clearly, the number of medieval literary fragments discovered to date (some three-hundred thousand) represents a smaller number of codices, since several, and sometimes many fragments originated from one codex whose pages or folios were often scattered among several libraries and only a particular study of this or that text would reveal their codicological affiliation. Quite a number of cases in which dispersed fragments were identified as deriving from the same codex suggest that it would be possible to surmise that the proportion of codices whose remains are kept in Geniza collections may amount to around one-sixth of the number of fragments; according to this rough

\textsuperscript{56} A great deal of information about the collections of Hebrew manuscripts, their sources and their history, is found in the excellent guide by Benjamin Richler, Hebrew Manuscript Collections. See also the list of libraries and their addresses at the website of the Institute of Microfilmed Hebrew Manuscripts within the website of the National Library of Israel (http://web.nli.org.il/sites/NLI/Hebrew/collections/manuscripts/Pages/default.aspx), as well as Richler, Hebrew Manuscripts. A useful survey to date on the Hebrew collections and their sources is included in the general introduction to Hebrew manuscripts authored by Moritz Steinschneider, see Steinschneider, Vorlesungen, pp. 57-90.

\textsuperscript{57} There is a wealth of catalogues and research literature on these fragments. We refer here to the proceedings of a special conference dedicated to the ‘Italian Genizah’: The Italian Genizah - Proceedings of the Conference held under the auspices of the Israel Academy of Sciences and Humanities and the Jewish National and University Library, Jerusalem, January 9, 1996, eds. A. David & J. Tabory, Jerusalem 1998, and especially the article by Mauro Perani (who discovered most of the fragments in Italian archives), “Hageniza haItalqit – Te‘ur kelali u-matsav hamehqrar” (in Hebrew) (ibid. pp. 83-93; a list of the previously published literature appears on p. 84, n. 2). The Hebrew articles in the above publication were translated into Italian and included in the collection La “Geniza italiana”, ed. M. Perani (Alfa tape 12), Bologna 1999. Since then, additional catalogues of these fragments have been published.
estimate, which still requires statistical substantiation, their total number may reach around fifty thousand.

The estimated number of one hundred thousand medieval books and book remains which have survived since the ninth century, represents of course, only a small proportion of the manuscripts produced in that era.\(^{58}\) The estimated number of book remains kept in the Geniza at the synagogue of the Palestinian community in Fustat – which was the source of most of the book remains estimated above – illustrates the high rates of production and book consumption among Jews in Muslim lands. During the years ca. 1000-1250,\(^{59}\) which, according to the discovered dated documents was the main period in which books remains were deposited in this Geniza site – some two-hundred and eighty thousand fragments survived. In other words, the members of one of the Jewish communities in Fustat consumed and intensively used at least forty thousand books, until they wore out and were placed in a depository.

\(^{58}\) Colette Sirat attempted to estimate the number of books written in the Middle Ages on the basis of literary evidence, book inventories, and demographic assessments of the size of Jewish communities, and arrived at an estimate of at least one million books. See, C. Sirat, ‘Les manuscrits en caractères hébraïques: Réalités d’hier et histoire d’aujourd’hui’, Scrittura e civiltà, 10 (1986), pp. 260–271. Recent calculations have generated precise information on the number of shelf-marks of the fragments from the Fustat Geniza and from other genizas and of the number of fragments they contain: the main concentration of Geniza fragments held at Cambridge University, yielded a count of 137,653 shelf marks holding 192,848 bifolia or folio fragments, or 190,000, if the number of fragments that were not found in the Ben Ezra synagogue in Fustat is subtracted from the total (these figures were provided by Rebecca J.W. Jefferson, formerly of the Geniza Unit in Cambridge). Continuously updated statistics on Geniza fragments is presented on the website of the Friedberg Genizah Project, which scanned almost all of the Geniza collections in the world (http://www.genizah.org). According to the statistics presented in August 2017, the number of shelf marks of the 72 collections contained in the website amounts to 251,863 numbering 307,145 fragments. Thanks to the (ongoing) development of the experimental software for this project, which may enable fragments deriving from the same codex to be automatically located (alongside manual verification of the matches by experts), it will be perhaps possible to produce more accurate estimates of the number of codices whose remains were preserved in the Fustat Geniza and in other genizas. See, A. Shweka, Y. Choeka, L. Wolf, and N. Dershowitz, ‘Automatic Computerized Identification of Handwriting and Matching of Genizah Fragments’, Ginzei Qedem, 7, (2011), pp. 173-209.). For a comprehensive description of the software, see L. Wolf, N. Dershowitz, L. Potikha, T. German, R. Shweka & Y. Choueka, ‘Automatic Palaeographic Exploration of Genizah Manuscripts’, in Kodikologie und Palaographie im Digitalen Zeitalter / Codicology and Palaeography in the Digital Age 2, ed. F. Fischer, Ch. Fritz & G. Vogeler (Schriften des Instituts für Dokumentologie und Editorik 3), Norderstedt: Books on Demand, 2010, pp. 157–179. One should keep in mind that not all fragments associated with the ‘Cairo Geniza’ derive from the Ben Ezra synagogue in Fustat, as does the main collection at Cambridge University. Some come from other, mostly Karaite, genizas in the Orient, especially those concentrated at the Dār Simḥa synagogue in Cairo. See the recent discussion, H. Ben-Shamai, ‘Is “the Cairo Genizah” a Proper Name or a Generic Noun? – On the Relationship between The Genizot of the Ben Ezra and Dār Simḥa’, in ‘From a Sacred Source’: Genizah Studies in Honour of Professor Stefan C. Reif, ed. B. Outhwaite & S. Bhayro, Leiden–Boston 2011, pp. 43–52. Of the total number of shelf marks or fragments from all of the genizas some twenty-thousand documents should be subtracted, and at least twenty-five thousand reused fragments that have been discovered already in European libraries and archives should be added.

\(^{59}\) According to Goitein, (Goitein, Mediterranean Society, vol. 1, 1967, p. 18) the Geniza contains an uninterrupted continuum of documents from 1002 through 1266.
These data demonstrate the high level of literacy in Jewish society, and furthermore indicate that the amount of wear and tear Hebrew books underwent due to intensive use, as well as the conspicuously individual character of their production, consumption, and preservation (as will be shown below), were the prime causes for the extinction of most of the manuscripts. It is quite probable that even more than the ravages of nature and time, or the confiscation, looting and even burning of books in Christian Europe, the frequent use of the books was the factor that caused the loss of most of the Hebrew manuscripts during the Middle Ages. In any event, it stands to reason that the profuse use of books, the individual nature of their production and maintenance, the destruction of books in Christian lands as well as the historical fate of the Jewish people, consigned to persecutory decrees, expulsions and wandering, all  


61 For the confiscation and burning of Hebrew books (especially Talmuds) in Europe, see Popper’s overview of censorship of Hebrew books: W. Popper, The Censorship of Hebrew Books, New York 1899 (rep. New York 1968), chaps. 1–5. The scarcity of books, and the resulting obligation to lend them, is apparent in a responsum by Rabbi Asher ben Yehiel (also known as HaRosh, b. Germany 1250 – d. Spain 1328; most of his responses were written in Spain): והיינו מקום שם עד כשם שמעooled – השדח הרובים בכל מדינת ישראל יינו מפרים ימי חפץ הבאר היינו מחזין על התורה National Library of China, 1224b; ed. S. Minorsky, Collected Works of Rabbi Yehiel (She’elot u-Teshuvot lehaRav Rabenu Asher, Venice 1552, Kelal 93, par. 3, fol. 136r). In this context, the statements made by the twelfth-century scholar Yehuda Ibn Tibbon – who had emigrated to Provence – in the ethical will left to his son Shemu’el are instructive, testifying both to the wealth of books in his private library and their rarity as well as to their lending and his library practices. Ibn Tibbon notes that he saw to his son’s library and supplied it even with multiple copies of the same work: ‘I have honored thee by providing an extensive library for thy use, and have thus relieved thee of the necessity to borrow books. Most students must bustle about to seek books, often without finding them. But thou, thanks be to God, lendest and borrowest not’ (Translated by Abrahams, Ethical Wills, p. 57); ‘Never refuse to lend books to anyone who has not the means to purchase books for himself, but only act thus to those who can be trusted to return the volumes. <...> If thou lendest a volume make a memorandum before it leaves thy house, and when it is returned, draw thy pen over the entry. Every Passover and Tabernacles call in all books out on loan’ (ibid., pp. 81-82). The rarity of books is also attested to in the many passages in Sefer Ḥasidim urging people to lend books and praising the lenders, e.g. passages 669, 672-778, (Sefer Ḥasidim eds. Y. Wistinetzki and J. Freimann, p. 177-178 (in Hebrew) and passage 745, ibid., p. 189. On the scarcity of books after the Spanish expulsion and during the early print era, see the long colophon of a Pentateuch with Rashi’s commentary, haftarot with a commentary by David Kimhi, and the Five Scrolls with a commentary by Avraham Ibn Ezra, Constantinople 1505-1506, printed by David and Shemu’el ibn Nahmias (no doubt the colophon had been written by Avraham ben Yosef ben Ya’ish, the book’s proofreader): הולכי בעלי התוספות שלא כתבו שם מקורות גנים המספריםочные ימי חפש כי אני יודע בבתיו ביבליוגרפיה ול{return} עות הקדמום ימי חפש כי אני יודע בבתיו ביבליוגרפיה ול
contributed to the lower survival rates of Hebrew manuscripts in comparison with
Latin or Arabic ones.\textsuperscript{62}

In truth, the discussion on survival rates of Hebrew books should be dealing also with
the quantification, classification and analysis of the textual genres that survived, and
even with the detailed and comparative surveying of the copying of the surviving
texts in different areas and periods. The collection of such data could have far-
reaching consequences for our knowledge about the reception, circulation, and rates
of use of texts, even though the survival of texts must have been accidental and linked
to historical circumstances such as the burning of the Talmud, pogroms, and
expulsions. Such a survey would have probably allowed us to assess which texts and
moreover which book patterns, book materials, quality and material value could affect
the very survival of a book in at certain time and in a certain place. Such an ambitious
undertaking would require tremendous resources that would allow the processing of
the contents of tens of thousands manuscripts that survived in their entirety or in
fragments and of their material attributes. Indeed, the online catalogue of the Institute
of Microfilmed Hebrew Manuscripts in the National Library in Jerusalem, which
contains a very large proportion of microfilms of all the extant Hebrew manuscripts in
the world, could greatly assist such a survey, as could other online catalogues of more
specific corpora. Despite the accidental nature of the survival of manuscripts, and
even more so of colphoned dated manuscripts, the information about regional and
chronological distribution according to genres, easily retrievable from Hebrew
Palaeography Project’s SfarData online database, would have significant, albeit
circumscribed, value.

\textsuperscript{62} Six hundred thousand is a rough, minimalist estimate of the number of surviving Arabic manuscripts.
See, A. Gacek, ‘Some Remarks on the Cataloguing of Arabic Manuscripts’, \textit{British Society for Middle
Eastern Studies}, 11 (1984), p. 173; however, according to the comprehensive documentation in the
libraries housing Islamic manuscripts (with the exception of private collections), their number amounts
to two and a half million; see \textit{World Survey of Islamic Manuscripts}, vols. 1–4, London: Al-Furkan
Table 4: Geo-cultural distribution of genres of manuscripts dated before 1540

For the basis of the statistical calculations in this book, see the Introduction below, in the section of ‘General statistics of the database’ (preceding Table 5).


<table>
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<th>1</th>
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<th>Total in Corpus</th>
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<td>5</td>
<td>2</td>
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<td>7</td>
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<td>Yemen</td>
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<td>4</td>
<td>77</td>
<td>60</td>
<td>3</td>
<td>2</td>
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<td>2</td>
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<td>Total</td>
<td>337</td>
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<td>459</td>
<td>17</td>
<td>759</td>
<td>27</td>
<td>261</td>
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<td>257</td>
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What is the date of the earliest surviving dated Hebrew codex? In the middle of the twentieth century it was believed by many that a manuscript of the Prophets, copied in Tiberias by Moshe ben Asher, of the famous ancient family of Masoretes, was the most ancient. According to the long and florid colophon at the end (p. 575), this decorated manuscript, kept in the Karaite Moussa Dar‘i synagogue in Cairo, was completed ‘eight-hundred and twenty seven years after the destruction of the Second Temple’, i.e. in 894/5. However, a few scholars have doubted the authenticity of the colophon, on the basis of the Masora version and vocalisation, which diverge from the Ben Asher tradition, as well as on the basis of codicological considerations, since the codicological characteristics of the manuscript suggest it had been manufactured some one hundred years later. Indeed, radiocarbon (Carbon 14) dating of a parchment

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63 Noted also in Beit-Arié, Hebrew Codicology, p. 9.
fragment from the manuscript body has shown that the parchment was manufactured not before 990, and therefore the manuscript should be dated at around 1000. The earliest dated manuscript which date is not in doubt was inscribed in Iran in the year 903/4. From this miniature biblical codex, whose width exceeds its length, only seven damaged folios containing portions of the books of Ruth and Nehemiah with superliner Babylonian vocalisation have survived in the Fustat Geniza, yet the original codex may have included the copying of all Hagiographa. According to the colophon, the manuscript had been copied by Yosef ben Nemorad in Gombad e-Malagan (גומבד ימלגאן), and since this very brief colophon mentions nothing about the destination of the copy, one can assume that he wrote it for himself. As mentioned, this fragment – produced in the Orient - is the earliest extant dated manuscript from any region; like the Moshe ben Asher codex, which dating has been discredited, it also includes an explicit indication of locality. The next-to-earliest extant manuscript was completed in the month of Tishrei in the year 1228 of the era known as minyan shetarot (equivalent to the Seleucid Era), i.e. 916 – MS St. Petersburg I B 3. This biblical manuscript too was written in the Middle East and it also features the Babylonian vocalisation. Unlike its predecessor it is preserved in its entirety.

A few Oriental manuscripts (as well as documents) contain dates of copying or transfer of ownership that are prior to the tenth century, but these dates are certainly unreliable. Sometimes the date noted in the colophon was clearly forged, and sometimes an entire colophon with an unusually early date had been inserted at a later period. Similarly, early dates describing a manuscript’s circumstance, such as its sale or its ownership, which might have provided a terminus ante quem for its manufacture, have been found to be unreliable.

64 For a detailed description of the Cairo manuscript, along with plates and a discussion of the reservations about its dating, including the results of the testing of the parchment, see Codices hebraicis, Part I, ms. 1.
65 117x127 mm, folio proportions knows as ‘oblong’.
66 Beneath the colophon and around it the Massoretic summary notes concluding the Hagiographa have survived. For the details of the manuscript fragments, all kept at the library of Cambridge University, their codicological description, as well as true-to-size photographic plates, see Codices hebraicis Part I, ms. 2.
67 See in detail, Codices hebraicis, Part I, ms. 3.
68 An example of a forged colophon is MS Cambridge Mm 5.27 – a Sefardic Bible, apparently from the 14th century – the colophon notes the date as תרטנ (856), and to assume that it was authentic (see S.M. Schiller-Szinessy, Catalogue of Hebrew Manuscripts
Preserved in the University Library, vol. 1, Cambridge 1876, pp. 12–15, no. 12). However, the manuscript’s visual appearance reveals that it dates from much later, and what’s more, that a second hand had clearly intervened in the colophon. Furthermore, the gematria (the numerical value of the letters) of the date תורָתְרֵי אַבְיָּהוּ should apparently be calculated as תורָת (1851), in the manner of sixth-millennium scribes, who used to select words beginning with the Hebrew letter ה (‘ה) to designate the millennium (see Manuscrits médiévaux I, 117, n. 1; and also S. Hopkins, “The Oldest Dated Document in the Geniza?”, in Studies in Judaism and Islam Presented to Shlomo Dow Goitein on the Occasion of his Eightieth Birthday, ed. S. Morag, I. Ben-Ami & N.A. Stilman, Jerusalem 1981, p. 84).

An example of an unreliable date in a document is found in a divorce act (get) written, so it seems, apparently in 748/9 in ‘Pumbedita’, Babylonia (a photo plate of the document was printed in Encyclopaedia Judaica, vol. 6, col. 124). This get, which was privately owned, has been transferred to the library of the Center for Advanced Jewish Studies at the University of Pennsylvania in Philadelphia, and Prof. David Goldenberg had submitted it for radiocarbon dating. The Carbon-14 test, which validated the doubts of palaeographers as to the reliability of the early dating, has verified that the get was indeed a forgery and that its earliest possible date was 1660. See D.M. Goldenberg, ‘Notes on the Library of Annenberg Institute’, JQR, 82 (1992), pp. 483–484.

An example of the disqualifying of a 9th-century (and allegedly even earlier) dating based on a record of ownership transfer: the unreliable date of Marḥeshvan 4608 (847), noted in a sale deed in a manuscript of Minor Prophets, MS St. Petersburg, Oriental Institute D62 (formerly from the Chwolson collection), and known already in the latter quarter of the 19th century. For a description of the manuscript see, C.B. Starkova, ‘Les plus anciens manuscrits de la Bible dans la collection de l’Institut des Études Orientales d’Académie des Sciences de l’U.R.S.S.’, in La paléographie hébraïque médiévale (Colloques internationaux du Centre National de la Recherche Scientifique 547), Paris 1974, pp. 38–39 and PL. VIII (where the date was erroneously noted as 747 instead of 847). The date of sale of the manuscript, known in the 19th century as Codex Karasubazar, provoked debates among scholars during the latter quarter of the 19th century. Avraham Harkavy already doubted the reliability of this annotation while Daniel Chwolson believed it was genuine. See Chwolson, Corpus inscriptionum, columns 184–196 (and the earlier discussions cited there), as well as lithographs 99–100; E. Deinard, Masa Krim, Warsaw 1878, p. 24-27 (in Hebrew). For the problematic nature of this dating in terms of the Hebrew calendar, see, H. Y. Bornstein ‘Divrei yemei ha’ibbur ha’ahronim’, HaTequfa, 14-16 (1922), p. 354 (in Hebrew). For the impossibility of ascribing the vocalisation, cantillation, and Masora of this manuscript to such an early period, see I. Yeivin, The Aleppo Codex of the Bible: a Study of its Vocalization and Accentuation, Jerusalem 1968 (Publications of the HUBP, Monograph series 3), p. 371 (in Hebrew). From an examination of the manuscript itself, and even more clearly from a colour scan sent to me recently by Shimon Iakerson it is clear that the deed of transfer of ownership at the end of the manuscript has two parts. The upper one is in a skilful Oriental semi-square script, and there is no reason to deny its authenticity, yet it contains no date, and reads: The Aleppo Codex of the Bible: a Study of its Vocalization and Accentuation, Jerusalem 1968 (Publications of the HUBP, Monograph series 3), p. 371 (in Hebrew). From an examination of the manuscript itself, and even more clearly from a colour scan sent to me recently by Shimon Iakerson it is clear that the deed of transfer of ownership at the end of the manuscript has two parts. The upper one is in a skilful Oriental semi-square script, and there is no reason to deny its authenticity, yet it contains no date, and reads: | hoch מתפישו תרמשה להובילו ועתוקל יתפישו | only with the addition of witnesses’ signatures. Underneath, an inscription in coarser script was added later, some of its letters blurred, presumably with the intention of making it difficult to decipher. This appears to be another of the forged colophons from the Firkowicz collections. See recently the extensive article by S. Iakerson, ‘The Karasubazar Codex of the Later Prophets from the Collection of the Institute of Oriental Manuscripts (D 62)’, in Manuscrits hébreux et arabes: Mélanges en l'honneur de Colette Sirat (Bibliologia38), eds. J. Olszowy-Schlanger & N. De Lange, Turhout 2014, pp. 63-76. For other examples of all types, see my Hebrew introduction to Codices hebraici, Part I, p. 13-14.

69 See, e.g. the facsimile plates from one of the palimpsests (see above, n. 19), shown in Taylor’s book: C. Taylor, Hebrew-Greek CairoGenizah Palimpsests from the Taylor-Schechter Collection, Cambridge
to make transparent the hierarchical structure of the text and of its units (such interventions were witnessed only later). Yet most of all it is indicated by the earliest dated manuscripts themselves. As pointed out, these display a mature and elaborate book craft, crystallized design patterns and a harmonious script, undoubtedly attesting to a prior tradition of codex production in the Middle East. We do not know how much time had before this tradition fused, yet we may perhaps speculate that it at least a century must have elapsed before it developed to achieve this level of craftsmanship, and hence to assume that Oriental book craft crystallised over the course of the ninth century.

Among the extant manuscripts dated up to 1540 – some three thousand codices which contain around 3400 codicological-palaeographic units, almost all of which have been documented – which provide the main foundation for the typology presented in this work, the number of manuscripts produced before the middle of the thirteenth century is very low and amounts to no more than two hundred and two. This small number makes it difficult, of course, to expose the early traditions of Hebrew book craft, although some of the codicological features observed in these manuscripts in various regions were found to characterise later manuscripts that survived in larger numbers; this fact lends greater validity to the scant testimonies from the earlier period. From the period before 1000, only twelve dated manuscripts have survived – all of them biblical codices inscribed on parchment and surely produced in the Middle East, just as most (some two-thirds) of the surviving manuscripts up until 1250 were produced in this same region, which was the cradle of the Hebrew codex. The regional deployment of the production zones of extant manuscripts had been gradually

70 See below, chapter 8.
71 *Codices hebraicis*, Part I, mss. 1-13. Despite the conspicuous difference between the survival rates of Latin manuscripts before 900 and the non-survival (or non-existence) of Hebrew codices during the same period, it is interesting that the chronological distribution of the survival rates of dated Latin manuscripts is quite similar to that of dated manuscripts in Hebrew script; this, too, is an indication to the problems arising from the scarceness of early manuscripts. Of 11,700 dated manuscripts in the Latin script included in the series of dated manuscripts published in various European countries before 1983, only a quarter were dated before 1440, and only 909 of these (i.e. 8%) were dated before 1200. See M.C. Garand, ‘Le catalogue des manuscrits datés: Histoire de l’entreprise’, in *Les manuscrits datés: Premier bilan et perspectives*, eds. G. Grand et al., Paris 1985, pp. 1–5. See also the calculations performed by B. Von Scarpatetti for this corpus, according to which only 15% of the mentioned manuscripts are dated prior to 1300 (*ibid.*, pp. 59-64). Indeed, the proportion of dated Hebrew manuscripts prior to 1200 in relation to all the dated manuscripts before 1500 is of 5%: their proportion until 1300 is 16%; and before 1400 their proportion is greater than that of Latin manuscripts and is as high as 41%!
expanding already during the eleventh century (and perhaps even during the tenth). One biblical codex was inscribed, as indicated by its damaged colophon, by four scribes and four Masoretic, between the years 941 and 1039 in Tunisia, in Kirouan. This city was the main centre of learning in North Africa and no doubt functioned as a source of influence for biblical codex production in Spain. This manuscript is of crucial importance for our knowledge of the early stages of the crystallisation of Maghrebi-Iberian book craft and scripts; This said, a number of manuscripts produced in the Middle East already at the turn of the tenth century and the beginning of the eleventh century by immigrant scribes from North Africa (surely from Tunisia) and from Spain disclose a number of the codicological characteristics that are typical of the Kairouan codex, and especially of the later Sefardic manuscripts. From the latter quarter of the eleventh century, there have survived the two earliest codices produced on the European continent, no doubt in Italy. It seems that the earlier of the two was copied in Otranto, in the region of Puglia in the south of Byzantine Italy in 1072/3, while the other was inscribed by a group of seven copyists in the year 1090/1. Surviving manuscripts from the twelfth century have considerably extended the geographical range of Hebrew book production as well as our understanding of its character. The earliest extant dated manuscripts produced in Spain, in areas of Germany and France, and in Byzantium also date from this century, especially its latter quarter. From Spain, there has survived a fragmented paper manuscript in Judaeo-Arabic of the works of the grammarian Yona Ibn Janāḥ, copied in 1119 in Valencia when it was still under Muslim rule. Especially impressive in terms of their codicological maturity, design, and scripts are the earliest extant manuscripts from regions of Christian Europe north of the Pyrenees and the Alps – four codices that were produced in the brief period between 1177 and 1193, in the zone of Germany, France, and England. The earliest of the manuscripts from the French-German zone, completed in 1177, is a volume of the tractates of the Babylonian

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72 MS St. Petersburg Eap. II B 124. The colophon of the codex, the earliest to have certainly been produced outside of the Middle East, was damaged and was treated with a dark colour. In the notation of the date only the thousands (5) and the hundreds (8) can be read without doubt, and therefore the date can be delimited to the period between 941 and 1039. It follows that the possibility that the codex had been copied as early as the 10th century cannot be ruled out. For a detailed description of the manuscript, see Codices hebraicis, Part II, ms. 29.

73 See also Codices hebraicis, Part I, mss. 12, 13, and the introduction, p. 15; Part II, mss. 19, 23, and the introduction, p. 15.

74 MS Vatican Vat. ebr. 31 Codices hebraicis, Part III, ms. 43.

75 MS St. Petersburg Eap.-Apa6. I 2440; See Codices hebraicis, Part III, ms. 57.
Talmud preserved in the Biblioteca Nazionale Centrale in Florence. The end of the twelfth century (1192) is also the date of a fragment of the earliest dated manuscript produced in the Byzantine zone, most probably in Greece.

In what regards the Middle Eastern zone, it should be emphasised that a manuscript written in 1144 in Yemen (Aden) has survived, and is therefore the earliest extant manuscript from this region; later books produced in this same area display a unique profile in the context of Oriental book and script traditions.

From the middle of the thirteenth century and onwards, we encounter growing numbers of dated (and localised) manuscripts which have survived from all the regions; these provide a plethora of data about Hebrew booklore and design and about the book scripts and script types in the zones of Hebrew book production throughout its various eras (see below in the section on the general statistics of the database, tables 6-9). The production zones of codices in Hebrew script were extremely widespread, for they paralleled the broad spread of Jewish communities in the mid- and late Middle Ages. From the ninth century onward, Jews adhered to the Hebrew script and used it throughout their diasporas for all their needs, be they literary or practical. Even when they adopted the languages of the host societies – prominently so in the Muslim lands, where a considerable portion of the literary texts were inscribed in Judaeo-Arabic – these languages were always rendered in transliteration.

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77 See Codices hebraicis, Part IV, ms. 79. See, ibid., the description of the other three manuscripts – ms. 84 which includes lexicographic works from 1188/9; ms. 85 containing the Pentateuch, Five Scrolls, and haftarot, from 1189; and ms. 91 containing the Prophets and Hagiographa, from 1193. None of these manuscripts indicate the place of production in the colophon, just as in the subsequent periods the manuscripts from these zones would bear few indications of locality, unlike the abundant use of such indications in the other zones (see below, chapter 2, at the beginning of section 4). Only ms. 85 allows us to surmise a more precise provenance with a considerable degree of likelihood, and to deduce from its textual and codicological data that it was almost certainly produced in England, whose Jewish residents had arrived from Normandy after the Norman Conquest. The style of the script in ms. 84 suggests that it was copied in France.

78 MS Oxford MS. Heb. c. 6 (Neubauer & Cowley Catalogue 2616/4). See Codices hebraicis, Part IV, ms. 89.

79 Codices hebraicis, Part IV, ms. 70.

80 Until that time most of the extant inscriptions (mostly gravestones and funerary inscriptions) were found outside of the Middle East and were inscribed chiefly in Greek. See J.B. Frey, Corpus Inscriptionum Judaicarum, vols. 1–2, Vatican City 1936–1952 (a new edition of the corpus of inscriptions in the first volume has been published by Lifshitz, accompanied by an extensive and useful introduction: B.L. Lifshitz, Corpus of Jewish Inscriptions: Jewish Inscriptions from the Third Century B.C. to the Seventh Century A.D., New York 1975); A. Fuchs, Corpus Papyrorum Judaicorum, vols. 1–3, Cambridge, Mass. 1957–1964.
by means of the Hebrew alphabet. In terms of the geographical spread of scripts used in the Middle Ages, the spread of the Hebrew script was greater than that of the Greek, Latin, or even Arabic scripts, since Hebrew writing was used in all of the zones in which other scripts were employed. Hebrew manuscripts were produced and consumed from central Asia in the east to England, far in the west, from Yemen and North Africa in the south to Germany and the Crimean peninsula in the north; in the zones of Christian civilisation which employed the Latin script, of Muslim civilisation in the Occident and Orient, where the Arabic script was used, and in those of the Christian Byzantine civilisation which used the Greek script. The production of Hebrew codices could not have escaped the influence of the codicological traditions and design and of the writing styles that were in use in the host societies in which Jews resided. Various features pertaining to various areas were borrowed and adopted unmodified by Jewish scribes, while other traits were totally rejected, or resisted for a long time. In any event, because of the great dispersal of their production sites, Hebrew manuscripts resemble manuscripts of their respective Gentile environments in terms of appearance, script style, the nature of the writing materials, production techniques, and the configuration of the text, more closely than they do Hebrew manuscripts produced in other geo-cultural zones.; Similarities with the latter seem to be reduced mainly to the actual use of Hebrew scripts and texts. It should be stressed that the commonality of production and design modes does not necessarily attest to direct borrowing or influences, or to the Jewish minority’s acculturation in the Gentile society. Writing materials, for instance, depend on the supply available in the marketplace to members of both the majority and minority societies. Style and aesthetic principles are often an outcome of the zeitgeist, of which the minority also partakes, and thus they may imbue its products even in the absence of direct contact with the dominant majority.

81 Apart from a few examples of inscriptions in a Latin script in Europe, the employment of a non-Hebrew script was unique only to certain Karaite circles during the 10th and 11th century, those employed the Arabic script for composing their writings, and even transliterated biblical verses using this script, perhaps as a confrontational tactic, or out of a desire to proclaim their distance from Rabbinical Judaism. See Beit-Arié, *East and West*, pp. 6-7, and the literature cited there, ibid. p. 105, n. 12.
Branches and main types of codicological traditions and script styles
The codicological traditions and script styles of Hebrew manuscripts may be classified into two main branches: the branch of manuscripts produced in the Islamic lands and which were greatly influenced by Arabic booklore and Arabic scripts and calligraphy, and the branch of manuscripts produced in the lands of Western Christianity, which were influenced to some measure by Latin book craft and scripts. Alongside these two main branches, a third, smaller one should be mentioned – that of manuscripts produced in Byzantium and which were presumably influenced by Greek book craft and writing. The manuscripts of this branch display hybrid influences of both main branches, reflecting their location between Occident and Orient.
The branch that developed within the regions of Islamic civilisation is divisible into two sub-branches – Eastern and Western. The Eastern sub-branch was consolidated, of course, before its Western counterpart (and before the other branches) and was a source of influence for the latter. It encompassed the countries of the Middle East, neighbouring areas in West-Central Asia, and East Asia Minor, areas which during the time of the earliest codices formed part of a single political entity of the Abbasid Caliphate. The Western sub-branch of the Islamic lands included the Maghreb, Muslim Spain in its extended borders at the time of the consolidation of Sefardic book culture, circa 1000, and Sicily, which was under Muslim rule. Despite the similarities between the scripts of the Western and Eastern sub-branches, the bookmaking practices of the Western sub-branch differ from those of the Eastern sub-branch in almost every aspect. The branch of the lands of Western Christianity is also divided into two sub-branches – that of the regions west and north of the Alps, including France (except for southern France), England and the German lands, and that of the region south of the Alps (Italy).

Five main types of book craft and script
The dated manuscripts can be classified according to their codicological characteristics and their script styles into five main types, as detailed below. These independent codicological entities are defined by geographical and cultural boundaries, not necessarily political ones. We shall formulate their definitions in geo-cultural terms which will be used to designate chief production zones, while the deriving adjectives will be used to designate the script type and codicological type. This typological

For a detailed survey of the branches of script types and their codicological characteristics see Beit-Arié, East and West, pp. 25-78.
division is synchronic and reflects the appearance of the types after their consolidation and diffusion; it is thus suitable for describing periods that have yielded an abundance of surviving witnesses. Unavoidably, because of its complexity and stage-by-stage development, the dynamic ‘Sefardic’ type must be presented individually and diachronically, and this is also the case in respect to the ‘Italian’ codicological type.

[1] Orient, Oriental – the book craft and script type practiced in the regions of the Middle East\(^83\) (Egypt, Palestine, Syria, and Lebanon), East Asia Minor (East Turkey), Iraq, Iran, and areas in central Asia, such as Uzbekistan, Bukhara and Afghanistan. Within the boundaries of this codicological entity, our observations to date allow us to single out two regional sub-types that took form after some time:

**Yemen, Yemenite** – The manuscripts produced in the southern Arabian Peninsula stand out for their unique script style, as well as their technical traits and overall design, at least from the end of the thirteenth century. Their uniqueness vis-à-vis the other Oriental manuscripts justifies their classification as a separate and independent type.

**Persia, Persian** – Manuscripts written in Iran and its environs (Uzbekistan, Bukhara) reflect, from early fourteenth century onwards, at least, a script style, quiring practices, and use of a local paper with a unique morphology. Unlike the Yemenite manuscripts, their special characteristics and small number do not warrant the establishment of a Persian sub-type in the typological classification, but where relevant, their unique characteristics will be pointed out.

[2] Sefarad, Sefardic – This geo-cultural and typological term encompasses not only the manuscripts produced on the Iberian peninsula – both within the extended borders of Muslim Spain before the Christian *reconquista*, and within Christian Spain – but also those produced in North Africa (Tunisia, Morocco, Algeria) and in Sicily, which was under Muslim rule. Moreover, the term also includes manuscripts produced in adjacent areas that were under continuous Christian rule beyond the Pyrenees – Provence and Bas-Languedoc (Occitania) in southern France.

\(^{83}\) Alternatively, perhaps the broader term – the Near East – should be used, although the difference between these terms has been obscured.
The Sefardic codicological type witnessed continuously since the end of the twelfth century combines the characteristics of the manuscripts produced in northern Spain, in areas which, since the consolidation of Hebrew codex production, were under Christian rule and continuously exposed to Latin book craft – especially in Catalonia and the Kingdom of Aragon – and in areas which, while Hebrew book craft was taking shape, were under Muslim rule and immersed in Arabic book craft. There are no surviving manuscripts with explicit indications of their place of production in Christian Spain prior to the beginning of the Reconquista. The earliest manuscript produced there was written in 1184 in Girona in northern Catalonia,\textsuperscript{84} when the recapture of the peninsula by Christian rulers was already almost completed. We therefore cannot know whether the Sefardic type known to us from manuscripts from the end of the twelfth century and onwards was also characteristics of Christian Spain before the Reconquista. Similarly, we cannot know whether this fully formed type characterised Muslim Spain. Apart from the earliest manuscript from the Iberian peninsula – which, as noted, was written in 1119 in Muslim Valencia some 120 years before it was finally retaken by the Christians\textsuperscript{85} and is written on paper and fragmented, and hence contains only scant codicological data – no other manuscript with an indication of locality has survived from areas of Muslim Spain before the Reconquista (with the exception of a few late manuscripts written in Granada, which remained under Muslim rule almost until the expulsion).

And yet, there are a number of reasons to suppose that the Sefardic, pan-Iberian codicological type originated in the Andalusian peninsula (in Al-Andalus), i.e. Muslim Spain, while in northern, Christian Spain a different book craft had prevailed before the first events of the Reconquista. This supposition relies on the fact that codicological traits characteristic of and unique to the Sefardic type as reflected in the many witnesses of later manuscripts, produced in the northern and southern Iberian peninsula after the Christian Reconquista, are already visible in the earlier tenth- and eleventh century manuscripts which were produced in Tunisia and the Middle East by

\textsuperscript{84} MS Hamburg Cod. Hebr. 19, the famous manuscript of the three ‘gates’ \((בבות\) of the Babylonian Talmud, see \textit{Codices hebraicis}, Part IV, ms. 81.

\textsuperscript{85} The earliest codex bearing an indication of locality that was produced in Muslim Spain, after the fragmented paper manuscript written in Judaeo-Arabic in Valencia (above, n. 76) was written in Toledo in 1197/8, around one-hundred years after its conquest by the Christians (See \textit{Codices hebraicis}, Part IV, ms. 95).
immigrants from the Maghreb. Therefore, it can be assumed that the roots of Iberian book craft are to be found in North Africa – especially in Tunisia and in the centre of religious learning in Kairouan. Nonetheless, the fact that early manuscripts produced in the Maghreb or by immigrants from the Maghreb survived in greater numbers than those produced in the Iberian Peninsula might be mere accident, which may not allow us to conclude that the origin of Iberian book craft was in the Maghreb. Yet, it is less reasonable to suppose the opposite – that the Maghrebi book craft originated in Spain – an assumption that could be supported chiefly by evidence that immigrants from Spain had settled in the Maghreb during the ninth century. If the codicological tradition of the Muslim Maghreb was a source of inspiration and borrowing for book producers in Al-Andalusia (Muslim Spain), it certainly could not have been a source of inspiration for the scribes in Christian Spain. In any event, if Maghrebi book craft was adopted by book producers in Muslim Spain, it was tremendously elaborated in Andalusia. The spiritual and economic efflorescence witnessed in Spain, as opposed to the impoverishment of the North African communities, has made Spain the chief representative of the type, which is apparently rooted in the Maghreb.

Furthermore, we have evidence indicating that the non-square scripts – semi-cursive or cursive – which were employed in Christian Spain before the first Reconquista or during its first stages in the eleventh century was unlike the semi-cursive or cursive script known from documents or drafts from Muslim Spain, or from the script of the earliest manuscript from Muslim Spain mentioned above and dated from 1119. Bilingual documents in Latin and Hebrew – deeds of transfers of property and the like – written in Catalonia (especially in Barcelona) from 1000 onwards, clearly attest that the style of the Hebrew script employed in them resembles the style of the cursive or semi-cursive scripts used in the Christian lands beyond the Pyrenees, especially in bilingual deeds (in Latin or French and Hebrew) from England from the end of the twelfth century and until the expulsion of the Jews from England, as well as in manuscripts from France (and Germany) from the first half of the thirteenth century.

86 For the manuscript written in Tunisia (most likely in Kairouan), see above in the references to notes 72 and 73, and in the notes themselves. These witnesses can be joined by MS Oxford MS. Heb. b.1 (Neubauer & Cowley Catalogue 2673/8), a fragmented manuscript of the Talmud written in 1123, probably in North Africa (See Codices hebraici, Part III, ms. 63).
87 One can also assume that the Maghrebi book craft, had initially been an offshoot of the earlier Oriental type, as attested by the resemblance of their square scripts, but that an early stage it adopted utterly different practices, and became detached from the Oriental tradition.
Despite the chronological gap between the Catalonian findings and the Franco-English ones, it is clear that the script style used in Christian Spain is close to the type that was emerging in northern France (and in its English offshoot, in wake of the Norman conquest), and in the German lands. And because the classification of Hebrew manuscripts into types demonstrates clearly that particular codicological traits are always coupled with particular script styles (with the exception of manuscripts written by immigrant scribes), one can assume that just as a different script was used in Christian Spain than in Muslim Spain – the former style disclosing affinities to the Ashkenazic type (see below) in view of the later findings of that type – thus it also exhibited a different book craft which resembled that of Christian lands beyond the Pyrenees. The morphological and stylistic affinities with the shared Hebrew script, which was employed throughout the domain of Christian lands, like the shared Latin Carolingian script employed there, gradually disappeared from Catalonian deeds after the beginning of the reconquest of the Muslim cities, as early as the end of the eleventh century, and a deed from 1092 already visibly displays the unique features of the Spanish/Sefardic-Andalusian script, although the Christian-European style was used in a hybrid mode until 1112. It follows that the reconquest of the Muslim regions by Christians did not lead to the diffusion of the European-Christian styles of the Hebrew script, but paradoxically, it seems, led to the adoption of the Spanish-Muslim writing style of the south by scribes in the Christian north.89

Stemming from around the same time as the extant dated parchment codices from Catalonia is the earliest extant dated manuscript (dated 1202) bearing the indication of locality in Provence in southern France,90 a region bordering Catalonia beyond the Pyrenees. The script, character, and codicological features of this manuscript – resembling the script and features of later manuscripts produced in that region and in the adjacent Bas-Languedoc – are unmistakably Spanish-Muslim. It can be assumed that in these regions, as in Catalonia, the previously practiced script and booklore were of the European-Christian type. Although Provence’s political affiliation with the princepoms of Barcelona, as well as the region’s non-Jewish cultural and


linguistic affinities to Catalonia, might have allowed Spanish-Muslim booklore to infiltrate from Christian Catalonia after the first *Reconquista* into the adjacent areas of Provence, this apparently was not the reason for its adoption there. The already established features of the 1202 manuscript attest to the prior adoption of the Andalusian tradition. One may speculate that this process began during the second half of the twelfth century following the Almohad invasion of Muslim Spain and the persecution of the Jews there. Through the significant influence of Jewish scholars who fled Muslim Spain following the invasion of the al-Muḥāḍānīn and the persecutions, and settled in Provence, both book craft and script styles began to gradually change and took on a Spanish character.

It is apparent then, that both the book craft and script style that had originated most probably in the Muslim Maghreb, were undoubtedly further shaped and elaborated in Muslim Spain, but were eventually adopted throughout the Iberian Peninsula and even beyond it.

[3] **Ashkenaz, Ashkenazic** – This geo-cultural and typological term requires clarification and needs to be defined while keeping in mind its problematic nature. The definition applies to a form, and not to a geographical or political entity, and therefore it may be applicable beyond the boundaries of one region or one geopolitical unit. Just as the term ‘Sefardic’ may be misleading, because according to our method it equally applies to North Africa, Sicily, Provence, and Languedoc, so the term ‘Ashkenaz’ and its derivations may be even more misleading. This term has been chosen as a general demarcation of the booklore and script style found in books from the twelfth century onward in a zone that included a number of areas: the German speaking areas that were part of the Holy Roman Empire but also areas bordering on them, such as Bohemia and Moravia, and eventually also Poland, and France (with the exception of southern France) and its offshoot in England subsequent to the Jews’ settling there after the Norman Conquest. Indeed, I am aware of the use of the biblical name ‘Ashkenaz’ in medieval sources to designate German regions (initially the Rhineland), a designation that only later assumed more comprehensive cultural significance. However, in the absence of a more suitable Hebrew term, I have chosen
to employ this name and its derivations in the broad cultural sense of the later period\textsuperscript{91} in order to designate the common booklore practised in north-western Europe, regions of northern France, England, Germany, and its environs.\textsuperscript{92} Although after the thirteenth century there appear slight differences in the production practices of the codices and their script styles (in particular in the square script) between the main sub-regions in north-eastern Europe (and eventually also in Central and Eastern Europe) – France and England on one hand, and the other territories (which we designate as ‘Germany’) on the other – these variations require further investigation: in itself an extremely challenging undertaking due to the small number of indications of locality they contain. In any case, these differences do not justify a splintering of the clearly shared codicological and palaeographic tradition.

[4] **Italy, Italian** – a codicological type and script type whose boundaries are easily defined within the Italian peninsula. From a historical point of view, it should indeed be asked whether Italy can be conceived of as a uniform framework from the time that Hebrew codex production first began there. The production of Hebrew books before the thirteenth century was no doubt concentrated in southern Italy, especially in the province of Puglia, in which Jewish communities and prestigious religious academies (*yeshivot*) had flourished since the ninth century – the presumed era when the development of Hebrew book craft began – and until their destruction in the last decade of the twelfth century. This important spiritual centre in southern Italy was under Byzantine rule, ensconced in Greek booklore. Might the codicological profile of the Hebrew books produced in southern Italy in the earlier period diverge from the profile known to us from most of the Italian manuscripts, and in fact reflect a Byzantine tradition, which should therefore be associated with the Byzantine type? As in the question regarding the source of the Spanish/Sefardic type, this question, too, cannot be easily answered. We do not possess any localised manuscripts from Puglia from the Byzantine era, and at present can only estimate, with a large degree of certainty, that indeed, the two earliest extant manuscripts, the first of which is dated

\textsuperscript{91} See A. Grossman, *The Early Sages of Ashkenaz: Their Lives, Leadership, and Works*, Jerusalem 2001 (in Hebrew), p. 1, n. 1. Grossman notes that from a cultural point of view, the Jews of Ashkenaz included the Jews of northern France and some of the Slavic lands; our terminology also refers to the cultural entity common to Germany and northern France.

\textsuperscript{92} European languages allow us to avoid this misconception and use the hyphenated term Franco-German (in English), although it seems preferable to adopt a shared typological term and to use the Hebrew term even in other languages.
1072/3 and the second close to it in date, were written in Otranto at the lower end of Puglia. These manuscripts do not display any especially different attributes from those of the few dated manuscripts produced in the latter quarter of the thirteenth century. It is possible that most of these manuscripts were produced in Puglia or Campania, and that only after the destruction of those communities did the centre of book production migrate to central Italy, where religious academies and intellectual activity are known from as early as the tenth century, and eventually migrating further north. Careful study of the development of the Italian scripts could perhaps allow us in the future to identify the Byzantine aspects of the Italian codicological type. Given the current state of knowledge, it seems that the various permutations of this type encompassed the entire peninsula. From an historical point of view, it seems likely that the Italian booklore emerged and was consolidated in Byzantine Italy independently of the Byzantine booklore that was prevalent in the Greek Isles and in the Balkans, and that it diffused from southern Italy to the entire peninsula. This assumption may explain the marked uniformity of book production in Italy.

[5] Byzantine, Byzantium – Manuscripts of this type were produced in Greece and the Greek Isles, in the Balkans, in western Asia Minor, and in areas surrounding the Black Sea, territories that had been part of the Byzantine Empire, before its decline at the time this type was consolidating. It is therefore appropriate to define this type within the boundaries of Byzantium and to use the term ‘Byzantine’ to describe it, rather than the traditional term ‘Romaniote’ – a term which circumscribes the diffusion of the type and more adequately reflects a later reality. The uniqueness of this codicological type, which displays characteristics that are typical of the Middle East but also those typical of Europe, lies in the scripts employed in it, despite the affinities of its square script to the Oriental script, and of its semi-cursive script to the Italian script. The square Byzantine script and the typical Byzantine semi-cursive script are known to us from dated or datable documents or letters which were preserved in the Geniza at least two-hundred years before the appearance of these

93 The scribe who copied that earliest dated manuscript of 1072/3 participated partially in the copying of another undated manuscript – a Mishna to which the chief copyist added glosses in the unique Otranto dialect written in Hebrew transliteration. For details, see Codices hebraici, Part II, ms. 38.

94 At the same time, one cannot ignore the considerable morphological similarity between the semi-cursive Italian script and the semi-cursive Byzantine script, and perhaps also between the Italian manuscript formats and those of Byzantine manuscripts, which might attest to a known affinity between the book craft and codex design of Puglia and those of Byzantium.
scripts in dated codices. During the fourteenth and fifteenth centuries the semi-cursive script took on variations, apparently due to the influence of the Sefardic script imported to the region by Sefardic immigrants.

Map of the geo-cultural division of the main types and sub-types of Hebrew book craft and script
The statistics presented in this book derive from SfarData, the database of dated manuscripts, and they have been calculated in two ways. Most of the calculations are based on the number of records representing codicological-palaeographical units. Each independent codicological unit in a codex has been documented in the database. One codex may contain several codicological units which are independent of each other. In cases where several copyists had participated in the copying of one codicological unit, each copyist was documented as a separate record. One codicological unit may contain several palaeographical units. Statistics pertaining to codicological characteristics that are likely to be individual are based on the number of records that corresponds to the number of palaeographical units. Statistics of basic characteristics – such as place names, writing material, and the destination of the copy – which are shared by all the copyists of one manuscript are based on the number of records that corresponds to the number of codicological units, i.e. codices.

To simplify the presentation, fractions of percentages have been rounded off – fractions less than 0.5 percent were rounded to 0 and those above 0.5 percent were rounded to 1% – and therefore a deviation of ±1% may appear in the total percentage count.

Sometime deviations occur in the calculation of the total numbers of codices or records when classified according to characteristics (and correspondingly also in the percentage totals), when in the process of recording or coding the data, not all of the traits were registered, or parallel traits were found (e.g. when the same copyist used two script types in one codicological unit), or when a certain feature was classified in two ways because of an uncertainty.

The data reflect the database before its conversion for the internet in 2010. During the process of conversion, some data were changed.

**Table 5: The manuscripts and various types of records in the SfarData database**

<table>
<thead>
<tr>
<th>Type of Manuscript</th>
<th>Corpus</th>
<th>Records</th>
<th>Codices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicitly dated manuscripts until 1540 fully documented in situ</td>
<td>3142</td>
<td>2777</td>
<td></td>
</tr>
<tr>
<td>Unstudied dated manuscripts (partially recorded on the basis of microfilms or catalogues)</td>
<td>258</td>
<td>249</td>
<td></td>
</tr>
<tr>
<td>Unlocated or lost dated manuscripts (recorded on the basis of catalogues and literature)</td>
<td>179</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Disqualified dated manuscripts (dates found to be unreliable)</td>
<td>85</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Studied undated manuscripts, either with colophon or with disclosed names, and other selected manuscripts</td>
<td>1176</td>
<td>1068</td>
<td></td>
</tr>
<tr>
<td>Unstudied undated manuscripts partially recorded on the basis of microfilms or catalogues</td>
<td>430</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>Unlocated or lost undated manuscripts (as above) recorded on the basis of catalogues and literature</td>
<td>69</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Undated manuscripts (as above) disqualified for various reasons</td>
<td>42</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Total of in situ documented Hebrew manuscripts</td>
<td>4318</td>
<td>3845</td>
<td></td>
</tr>
<tr>
<td>Selected dated and localised documents</td>
<td>1181</td>
<td>1181</td>
<td></td>
</tr>
<tr>
<td>Dated and localised Arabic manuscripts (paper morphology)</td>
<td>143</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6705</strong></td>
<td><strong>5029</strong></td>
<td></td>
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Table 6: Geo-cultural diffusion of dated manuscript records

<table>
<thead>
<tr>
<th>Zone</th>
<th>Codices</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sefarad</td>
<td>598 (21%)</td>
<td>695 (2%)</td>
</tr>
<tr>
<td>Ashkenaz</td>
<td>361 (13%)</td>
<td>422 (13%)</td>
</tr>
<tr>
<td>Italy</td>
<td>989 (36%)</td>
<td>1096 (35%)</td>
</tr>
<tr>
<td>Byzantium</td>
<td>276 (0%)</td>
<td>329 (10%)</td>
</tr>
<tr>
<td>Orient</td>
<td>398 (4%)</td>
<td>434 (14%)</td>
</tr>
<tr>
<td>Yemen</td>
<td>129 (5%)</td>
<td>133 (4%)</td>
</tr>
<tr>
<td>Unidentified</td>
<td>26 (1%)</td>
<td>33 (1%)</td>
</tr>
<tr>
<td>Total</td>
<td>2777</td>
<td>3142</td>
</tr>
</tbody>
</table>

Table 7: Chronological distribution of dated codices according to script type

<table>
<thead>
<tr>
<th>Period</th>
<th>Sefardi script</th>
<th>Ashkenazic script</th>
<th>Italian script</th>
<th>Byzantine script</th>
<th>Oriental script</th>
<th>Yemenite script</th>
<th>Unidentified</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>(? 894/5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>901–1000</td>
<td>1</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1001–1100</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>1101–1200</td>
<td>6</td>
<td>8</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>55</td>
</tr>
<tr>
<td>1201–1300</td>
<td>60</td>
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<td>85</td>
<td>30</td>
<td>54</td>
<td>19</td>
<td>7</td>
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<td>1301–1400</td>
<td>212</td>
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<td>169</td>
<td>25</td>
<td>116</td>
<td>17</td>
<td>66</td>
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<td>1401–1500</td>
<td>653</td>
<td>41</td>
<td>274</td>
<td>17</td>
<td>325</td>
<td>20</td>
<td>168</td>
</tr>
<tr>
<td>1501–1540</td>
<td>176</td>
<td>39</td>
<td>64</td>
<td>14</td>
<td>118</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>1112</td>
<td>35</td>
<td>596</td>
<td>19</td>
<td>623</td>
<td>20</td>
<td>271</td>
</tr>
</tbody>
</table>
### Table 8: Chronological distribution of dated manuscripts and their records

<table>
<thead>
<tr>
<th>Period</th>
<th>Codices</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>894/5 (?)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>901–1000</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>1001–1100</td>
<td>40 (1%)</td>
<td>51</td>
</tr>
<tr>
<td>1101–1200</td>
<td>68 (2%)</td>
<td>71</td>
</tr>
<tr>
<td>1201–1300</td>
<td>243 (9%)</td>
<td>286</td>
</tr>
<tr>
<td>1301–1400</td>
<td>600 (22%)</td>
<td>681</td>
</tr>
<tr>
<td>1401–1500</td>
<td>1406 (51%)</td>
<td>1593</td>
</tr>
<tr>
<td>1501–1540</td>
<td>408 (15%)</td>
<td>448</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2777</strong></td>
<td><strong>3142</strong></td>
</tr>
</tbody>
</table>

### Table 9: Geo-chronological distribution of manuscripts and their records

<table>
<thead>
<tr>
<th>Zone</th>
<th>Period</th>
<th>Codices</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sefarad</strong></td>
<td>1001–1100</td>
<td>2</td>
<td>5</td>
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<tr>
<td></td>
<td>1101–1200</td>
<td>6</td>
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<td>1201–1300</td>
<td>57</td>
<td>58</td>
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<td>1301–1400</td>
<td>151</td>
<td>160</td>
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<tr>
<td></td>
<td>1501–1540</td>
<td>55</td>
<td>77</td>
</tr>
<tr>
<td><strong>Ashkenaz</strong></td>
<td>1101–1200</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1201–1300</td>
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<td>1301–1400</td>
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<tr>
<td></td>
<td>1501–1540</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>1001–1100</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>1101–1200</td>
<td>2</td>
<td>2</td>
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<td></td>
<td>1201–1300</td>
<td>47</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>Byzantium</td>
<td>Orient</td>
<td>Yemen</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>1301–1400</td>
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<tr>
<td>1401–1500</td>
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<td>1501–1540</td>
<td>191</td>
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<td></td>
</tr>
<tr>
<td>Byzantium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1101–1200</td>
<td>2</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
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<td>1301–1400</td>
<td>58</td>
<td>51</td>
<td>33</td>
</tr>
<tr>
<td>1401–1500</td>
<td>150</td>
<td>62</td>
<td>68</td>
</tr>
<tr>
<td>1501–1540</td>
<td>62</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Orient</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>894/5–1000</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001–1100</td>
<td>36</td>
<td></td>
<td></td>
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<tr>
<td>1101–1200</td>
<td>51</td>
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</tr>
<tr>
<td>1201–1300</td>
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<td>1301–1400</td>
<td>89</td>
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<td>1401–1500</td>
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<td></td>
</tr>
<tr>
<td>1501–1540</td>
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<td>1301–1400</td>
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<td>1501–1540</td>
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</tr>
<tr>
<td>Total</td>
<td>2777</td>
<td>3142</td>
<td></td>
</tr>
</tbody>
</table>
Table 10: Summary of statistics concerning the dated records before 1540

<table>
<thead>
<tr>
<th>Period</th>
<th>Sefarad</th>
<th>Ashkenaz</th>
<th>Italy</th>
<th>Byzantium</th>
<th>Orient</th>
<th>Yemen</th>
<th>Unidentified</th>
<th>Total in corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>894/5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>901–1000</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1001–1100</td>
<td>5</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>38</td>
<td>75</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1101–1200</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>53</td>
<td>75</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1201–1300</td>
<td>58</td>
<td>20</td>
<td>85</td>
<td>30</td>
<td>77</td>
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<td>1</td>
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<tr>
<td>1301–1400</td>
<td>160</td>
<td>23</td>
<td>155</td>
<td>23</td>
<td>98</td>
<td>14</td>
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<td>5</td>
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<tr>
<td>1401–1500</td>
<td>388</td>
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<td>145</td>
<td>9</td>
<td>109</td>
<td>7</td>
<td>11</td>
<td>22</td>
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<tr>
<td>1501–1540</td>
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<td>7</td>
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<td>24</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>695</td>
<td>22</td>
<td>422</td>
<td>13</td>
<td>1096</td>
<td>35</td>
<td>329</td>
<td>10</td>
</tr>
</tbody>
</table>

5. The unique character of Hebrew book production

Unlike the basic centralised nature of medieval Latin, Greek, and to some extent, Arabic book production, and unlike the authoritative supervision of the copying of Latin manuscripts and the control over their versions and dissemination in institutional — collections, be they ecclesiastical, royal, or aristocratic, the Hebrew

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medieval book was initiated, produced, consumed and kept individually. Testimonies provided by copyists in their colophons and the absence of contrary evidence in indirect historical sources such as the responsa, attest that no Jewish establishment – whether centres of learning, batei midrash, yeshivot, synagogues, or community authorities – instigated and financed the production of Hebrew manuscripts; nor did they administer the selection and the versions of texts to be copied or assemble and preserve them in communal or scholarly collections. Until the late middle ages, Latin manuscripts were manufactured and usually kept in ecclesiastical centres and institutions. In the early Middle Ages and at the height of that era, books were produced mainly in monasteries: there, canonical texts were copied in the scriptorium – a collective atelier in which the monks were engaged in copying – in accordance with the monastery library’s ecclesiastical needs and functions or as commissioned by other monasteries. Books were frequently kept and used in the very place where they had been produced. Later, books were manufactured in cathedral ateliers as well and eventually, universities initiated the production of books (first at the University of Paris, in the 1250s and 1260s); there, manuscripts were copied in the pecia system, namely - dismantling the model into small quires, which were allocated to a number of qualified copyists. This method guaranteed quick supply and uniform versions of the studied texts. Only in the late Middle Ages, from the beginning of the

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96 On the individual character of medieval Hebrew manuscript production, see Beit-Arié, 'SFARDATA', pp. 167-168; idem, East and West, pp. 81-83; idem, 'Transmission of Texts', pp. 38-39, idem, History of Production pp. 22-23 (234-235). In my book Unveiled Faces (pp.84-87), I discuss the paradox involved in Hebrew book production, which had an unmistakable individual character, while being characterised by stereotypical book-craft and writing styles in each geo-cultural region.

97 On the large-scale production of bibles in the scriptorium of the important monastery of Tours in France during the Carolingian era and on the copying of other books there for monastic libraries in Tours and outside Tours, see D. Ganz, 'Mass Production of Early Medieval Manuscripts: The Carolingian Bibles from Tours', in The Early Medieval Bible: Its Production, Decoration, and Use, ed. R. Gameson, Cambridge 1994, pp. 53-62. On the basis of the extant copies Ganz estimated that over the course of the second half of the 9th century this monastery may have produced two complete Bibles every year (ibid., p. 53).

98 For the history of medieval libraries in Europe, and in Italy in particular, see the illuminating discussions by Armando Petrucci, 'Il libro manoscritto', in Letteratura Italiana, ed. A. Asor Rosa, vol. 2: Produzione e consumo, Turin 1983, pp. 499-524; idem, 'Le biblioteche antiche' in ibid., pp. 528-554, and in English translation, as a chapter of his book, idem, Writers and Readers in Medieval Italy: Studies in the History of Written Culture, ed. and transl. C.M. Radding, New Haven-London 1995, pp. 169-235. On the identity or connection between the scriptorium and the monastery library, see ibid. pp. 203-204. Even Petrucci, who challenged the traditional view concerning the total centralisation of Latin book production in the early medieval monastic and ecclesiastical scriptoria, only demanded that this view be 'somewhat' altered (ibid., pp. 77-102, esp. p. 101).

thirteenth century onward, were the production and consumption of manuscripts taken 
over from the monastic and ecclesiastical settings, gradually shifting into private 
hands. Then too, although initiated by private hands, book production was carried 
out to a large extent in manufacturing centres and commercial ateliers. In those 
times Latin books were preserved in institutional collections, as was customary in 
Islamic countries too. Though many dignitaries in the church or aristocracy set up 
private libraries, these can be considered to be institutional, rather than private. 
Indeed, in mid- to late fifteenth-century Italy libraries that were established by 
princely initiative under humanistic influence are nowadays regarded as the 
precursors of public or state libraries.

By way of contrast, the making of Hebrew books was almost exclusively the product 
of private initiative aimed at personal use. This can be deduced not only from the 
rather meagre indirect information on production practices, on the copying, purchase, 
consumption and keeping of books as well as on their social function and economic

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100 See Ornato, Apologia, p. 13. On the debate between scholars concerning whether secular urban 
scriptoria had flourished at the time when monopoly over book production was taken out of monastic 
hands, see Elizabeth Eisenstein's monumental book: The Printing Press: Communications and Cultural 
examined more than 800 manuscripts produced in the Rhine valley dating from 1380 until 1500 
according to the volumes holding the dated Latin manuscript corpora, found that even at such a late 
period, 61% of the manuscripts were destined for the ecclesiastical establishment (in the 15th century 
the rate of book ownership of this institution was 69%) and the rest were produced for individual use: 
out of which 74% for the clergy, 14% for students (connected to the Church) and only 10% for secular 
users. The ratio of copyists who can be identified as secular did not exceed 2% (the ratio in France and 
Italy was higher, since jurists, notaries, and clerks often substituted clerical copyists in those countries. 
See C. Bozzolo, ‘La production manuscrite dans les pays rhénans au XVè siècle’, Scrittura e civiltà, 18 

101 See the comprehensive study of the commercial secular production that had begun in Paris as early 
as the 13th century: R.H. Rouse & M.A. Rouse, Manuscripts and their Makers: Commercial Book 
Producers in Medieval Paris, 1200–1500, vols. 1–2, Turnhout 2000. Despite this commercial 
development in the production of Latin books, the authors note that from the end of the 13th century 
onwards the University of Paris controlled the trade in books in that city (ibid., vol. 1, pp. 75-81). This 
study also reveals that in these commercial production centres one could already discern processes of 
text-standardisation and monopolisation of distribution as well as a large measure of uniformity in the 
design of copies of a known text; in other words, even in the course of the privatisation of the Latin 
book the tendency toward centralisation was preserved. See also, recently, in the collection Patrons, 
Authors and Workshops: Books and Book Production in Paris around 1400, ed. G. Croenen & P. 
Ainsworth, Louvain–Paris–Dudley, Mass. 2006. See also Derolez’s concise summary of the 
transformations that the production of Latin books underwent in the later Middle Ages, during the 
twelfth to fifteenth centuries, with the emergence of urban and secular culture: A. Derolez, The 
Palaeography of Gothic Manuscript Books: From the Twelfth to the Early Sixteenth Century, 

102 See Petrucci, Writers and Readers (above, n. 98), pp. 225-231. An exhaustive summary of the 
research on the development of private libraries and their accelerated growth among the cultural, 
social, and political elites (princes and rulers, scholars and humanists, wealthy merchants and those on 
their way up) during the Italian Renaissance, particularly in Florence, is provided by Pasternak, 
Together and Apart, pp. 101-118.
value found in literary and documentary sources, but mainly from the abundant and decisive evidence contained in the manuscripts themselves.

Scholars, literati, or anybody who could read—in certain areas, like Italy from the late thirteenth century onward, this could also be a learned or literate woman—and who wished to obtain a copy of a text—biblical, exegetical, liturgical, talmudic, Midrashic, halakhic, philosophical, kabbalistic, literary, or scientific—had three options. They could try to acquire an existing copy from an owner in their vicinity. Indeed, the scarcity of evidence (if any) for the presence of book-sellers—at least in Europe and North Africa—and the records of ownership transfers inscribed in many manuscripts, suggest that used books were usually bought directly from their owners and not from dealers.  

This said, we find in Italian deeds of sale, inscribed at the end of manuscripts, some rare mentions of an intermediary or agent who would represent the buyer and pay for the book. No doubt such acquisitions were limited by the availability of the book in the buyer’s region, and the chances of finding a specific wanted text—unless it were a common one—were meagre. One may infer that due to scant supply books would be acquired at random just because they were obtainable. The same randomness goes for manuscripts inherited by the heirs of a deceased owner. For indeed, according to many inscriptions in Italian manuscripts, the library of the deceased father would usually be divided among his sons.

The two other options facing those who wished to get hold of a book, already from the time of the earliest dated codices, did not involve hand-to-hand transactions but tailor-made manufacture. One possibility was hiring a professional or occasional scribe; the other option, more suited to those who could not afford to purchase an available book or hire a scribe was self-production, namely, copying the desired

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103 On the rare mention of a Jewish book trader from Perugia in the region of Umbria in Italy in two Latin documents from 1345 and 1346, see A. Toaff, *The Jews in Umbria*, vol. 1: 1245–1435 (A Documentary History of the Jews in Italy, ed. S. Simonsohn; Studia Post-Biblica 43), Leiden–New York–Köln 1993, nos. 171, 180 (Nurit Pasternak drew my attention to these and other documents from this collection mentioned below). However, according to these documents, the said trader dealt only in Latin books.

104 Certainly some bequests specified particular stipulations for dividing the library of the deceased. According to a will written in Latin in Narni, Umbria in 1475, a Jewish physician stipulated that his library, which included many Latin books he himself had purchased or had inherited from his physician father, should be catalogued by his three heirs and not be sold until five years from the day of his passing. If his grandson were to study and earn a degree in philosophy and medicine, he would have the first right to the books and would be able to purchase them at half their value from the other heirs. See A. Toaff, *The Jews in Umbria*, vol. 2: 1435–1484 (A Documentary History of the Jews in Italy, ed. S. Simonsohn; Studia Post-Biblica 44), Leiden–New York–Köln 1994, no. 1685.

105 Later, perhaps in the 17th century, Yosef ben Moshe testified, in a colophon he wrote in Crimea, to his own financial inability to purchase books, which led him to undertake the task himself: "העיר ה' את
Both ways of producing new books depended of course on the availability of a manuscript that could serve as a model for the copying. The manners in which such models were obtained (in some regions copyists would designate such a model by the term הש כתיבן) are still unknown to us. How such model copies located were, how was the owner’s permission to duplicate his manuscript obtained, and on what conditions was consent secured? Were the books given out on loan, or did the scribe or self-copyist copy them at the owner’s homes? These are questions that cannot be answered with any degree of certainty due to an almost total lack of testimonies.

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The literary sources at our disposal relating to book production, and consumption owners comprise mainly the European halakhic literature, the Tosafot, responsa and various early halakhic works, as well as the Sefer Hasidim, the major work of the Ashkenazic Pietist movement in Germany, which is our richest Hebrew source of knowledge on books in general, and on scribal craft and practices in particular. The European documentary sources comprise mainly indications of ownership, deeds of sales of manuscripts, inscriptions relating to the inheritance of books and appraisals of their value (only in Italy), as well as lists of books owned by one of the manuscript owners, registered on one of the manuscript’s blank pages. The main documentary sources in the Orient are book lists, that were inscribed separately and preserved in the Fustat Geniza. They shed light on the production, consumption, and marketing of manuscripts, especially in eleventh-through thirteenth-century Egypt.

The documents comprise catalogues and inventories of private libraries; lists prepared by book dealers, which sometime include prices; inventories of deceased persons’ estates or of synagogue property; lists by professional scribes which enumerating, among others, manuscripts deposited in their keeping in order to be copied, as well as calculations of fees; lists of borrowed books, lists of pawned books.

The party who had commissioned the copy gave his promise to the hired copyist to refrain for another ten years from using as a source for a new copy; the latter apparently held the original source of the copy in his possession and sought to maintain his monopoly over this intellectual asset, which afforded him a source of revenue. Again, from Byzantium, in the colophon of MS Oxford MS. Mich. 138 (Neubauer and Neubauer & Beit-Arié Catalogues 1982), which was written mostly in the Ashkenazic script, circa 1450, we read of the owner’s demand to have the source returned to him upon completion of the copy: "וכתב לנתן המערבי ונשבע לפני שני עדים שלא יתנהו לשום אדם להעתיקו מעתה עד תום עשרה שנים ופרע משלם." The copyist had intended to say that his copy had only served as a source for the party who commissioned the copy, who had promised to return it after copying it for himself. In any event, we are in possession of a few pieces of evidence indicating that copies of uncommon works were not freely given for secondary copies to be made, except under particular stipulations and perhaps monetary considerations.

Rothschild published a list of all 48 lists that have been printed: J.-P. Rothschild, 'Les listes des livres reflet de la culture des Juifs en Italie du nord au XV° et XVI° siècle', Manoscritti, frammenti e libri ebraici nell’Italia dei secoli XV–XVI – Atti del VII Congresso internazionale del'AISG, S. Miniato, 7–8–9 novembre 1988, ed. G. Tamani & A. Vivian, Rome 1991, pp. 163–193. In his book on the Italian Rabbinate during the Renaissance, Robert Bonfil documented 41 Italian booklists, some of which had been previously printed, and others that had not (R. Bonfil, Rabbits and Jewish Communities in Renaissance Italy, Jerusalem 1970, appendix B, pp. 295-298 (in Hebrew) [The appendices were not included in the English translation of the book: R. Bonfil, Rabbits and Jewish Communities in Renaissance Italy, transl. J. Chipman, London–Washington 1993]. The list inscribed at the front of MS London Add. 27169 is perhaps the earliest one known to us. It includes some forty works, and should apparently be dated to the twelfth century (see its copy, below, in the appendix to chapter 4, n. 52).
kept by money lenders, some of them with indications of their monetary value.\footnote{A great deal of detailed and valuable information is contained in 114 lists and documents assembled in Allony, Jewish Library. For the characterisation of the lists, see the preface (p. xiv) by the editor, Miriam Frankel, who added copious notes to the corpus prepared by Allony, who did not live to see it published. Especially noteworthy are the many lists compiled by the learned scholar, author, bibliographer, and copyist Yoṣe’ ben Ya’aqov HaBavlī Rosh Haseder in Fustat during the first decade of the thirteenth century (\textit{ibid}, nos. 97-114). His lists replete with bibliographic information and unequalled by any other lists in either East or West concern manuscript sales, prices of copies, copy blueprints, and unparalleled codicological detail – describing not only the writing material (in non-paper manuscripts), or the type of paper (Iraqi or Baghdadi), but sometimes also the format of the manuscripts (indicated usually by the manner of folding the paper sheet into a ‘quarter’ or ‘eighth’ of a paper), as well as the frequent notation of the number of ruled lines. His lists, like other Oriental lists, also note the number of quires in the books. And see \textit{ibid.}, the informative section on classification and cataloguing methods (nos. 30-39), containing also a (unique?) listing of books (no. 39), according to their incipits.}

Among the Geniza documents, letters relating to the commissioning and copying of manuscripts were also found, including details about the scribes’ fees.\footnote{S. D. Goitein combed through many records and made use of them. See Goitein, \textit{Mediterranean Society}, especially the subchapter entitled ‘Scribes and Copyists’ in vol. 2, pp. 228-240, and also according to the index entries ‘Books’, ‘Scribes’, ‘Copyists’, and similar terms in the volume of indices. See also, ‘Books: Migrant and Stationary – A Geniza Study’, in \textit{Occident and Orient: A Tribute to the Memory of Alexander Scheiber}, ed. R. Dān, Budapest–Leiden 1988, pp. 179–198. The Palestinian sources were collected in the subchapter entitled ‘Book production’ in Gil’s History of Palestine, pp. 232-235, which also contains references to the documents themselves that were critically edited in volumes 2 and 3 of the original Hebrew book. See, \textit{ibid.} for the extensive activity of the scribe Yisra’el ben Natan Sahalon the Maghrebi, who was located in Jerusalem and copied books during the 1050s and 1060s.}

An early and fascinating testimony concerning the commissioning of a copy of the Book of Josippon by a dignitary in Puglia in Southern Italy shortly after 925 comes from an epistle, cropped at its beginning, which was preserved in a late Oriental copy and survived on a folio from the Geniza (MS New York ENA 4009.5). The letter was published by E.N. Adler, ‘Un document sur l’histoire des juifs en Italie’, \textit{REJ}, 68 (1914), pp. 40–43; see, \textit{ibid}, pp. 288-290 for S. Poznański’s commentary on the letter; for the photographic plate of the recto of this letter see E.N. Adler, \textit{Catalogue of Hebrew Manuscripts in the Collection of Elkan Nathan Adler}, Cambridge 1921, pl. 4. The letter relates details concerning the pogroms against the communities of Oria and Otranto during the Arab invasion in 925, and about a number of scholars who survived and escaped both towns. At the end of the epistle its author makes known that Shemu’el, who had escaped the attacks a short while earlier, apologises that the copy of Josippon he had prepared on behalf of the epistle’s addressee had been robbed while he was on the road, near the location at which the epistle was written, adding that upon his arrival at that place the community leader and his men went out on horseback to attempt and retrieve the robbed item (apparently without success). The details in the epistle allowed Cassuto to identify its historical background, and he concluded that it was written in Bari, reinforcing Adler and Posnanski’s conjecture that the addressee was Ḥisdai Ibn Shaprut of Cordoba, a conjecture based chiefly on the fact that the epistle following this one on the copy was written by ‘Yehuda ben Ya’aqov of Rome, of blessed memory, to R. Ḥisdai, of blessed memory.’ See: U. Cassuto, ‘Una lettera ebraica del secolo X’, \textit{Giornale della Società asiatica italiana}, 29 (1918/1920), pp. 97–110. However, this identification is perhaps hardly compatible with Ḥisdai’s age, which at time of the events described in the epistle was, apparently, around fifteen. It seems therefore that this fragment was part of a late codex of Italian epistles, which were copied and assembled after while, and not necessarily epistles addressed to Ḥisdai. A great deal of information about books, their commissioning and purchase, is embedded in dozens of letter sent as responses to Naharai ben Nissim, a merchant and scholar who lived in Fustat for some fifty years until his death in the late eleventh century, as well as in several letters he himself wrote. Most of these sources have been published (some re-published), in Gil, Jews in Islamic Countries, vols. ii-iv.}
kind of binding and more, and most illuminating – the type and style of script, especially in Italy, the land of immigrants, in which a large variety of scripts coexisted, proving that the owners of private libraries could very well distinguish between the writing styles. Latin inventories of large Jewish private libraries in Europe, recorded and deposited in Christian archives – no doubt for legal ends – survived in Italy and particularly in Spain. Among them the inventory recording the largest number of manuscripts, and apparently the largest Jewish library in the Middle Ages, that of the library of Mordecai Finzi (a well-known scientist who copied many manuscripts for his own use) and his brother Yitsḥaq, sons of the banker Avraham Finzi. According to the Latin inventory attached to a legal document from 1454 kept in the archives of Bologna, the town in which the large book collection (most likely accumulated by the father) was kept, the Finzi library comprised 226 books. Another Latin inventory recording a multi-volume private library, namely that of Yehuda Leon Mosconi in Majorca, is dated 1375; two years later. following his death, an inventory was

113 For the codicological data, see above, at the beginning of n. 112. On indications of script styles, such as Iraqi, French, Provencal, Catalan, and Western (Maghrebi), see below, chapter 11, and also Beit-Arié, East and West, p. 33.
115 See C. Bernheimer, ‘Una collezione privata di duecento manoscritti ebraici nel XV secolo’, La Bibliofilia, 26 (1924–1925), pp. 1–26; on the total number of books, see ibid., p. 24. One of the most interesting manuscript collections was that of the merchant Menahem ben Aaron of Volterra in mid-15th century Tuscany, which may have been even larger than the Finzi collection, having been accumulated within the family over generations. These Hebrew manuscripts, or at least part of them, were plundered in 1472, when the town of Volterra was destroyed by Federico de Montefeltro Duke of Urbino, who added them to his private collection. From this collection there have survived at least 40 Hebrew manuscripts, most of them bearing indications of ownership by Menachem of Viterra and sometimes details about previous owners. Most of them are now part of the Urbinati collection in the Vatican Library (see the description of the manuscripts of the Urb. ebr. Collection in the Richtler & Beit-Arié Catalogue, and especially in the historical introduction about the Hebrew collection in the library by D.V. Proverbio (ibid. pp. x-xi-xvii), and see also Pasternak, Together and Apart, pp. 109, n. 69, p. 122 (on methods of purchasing manuscripts, their previous owners, and places of purchase), p. 125, n. 167). From the numbering (in Hebrew letters) of the manuscripts, which survived in a few of the codices manuscripts from the collection of Menahem of Volterra kept in the Vatican library, one may conclude that the number of manuscripts he amassed was no less than 211 (רי”א). See N. Allony, ‘Reshimot sefarim ktuvey-yad min hame’a haḥamesh–esre mi-Tivoli she-be-Italia’, Areshet, 1 (1959), p. 46 (in Hebrew). The extant part of this collection is extremely fascinating and deserving of research. Most of it contains manuscripts in the Sefardic script, written by immigrant scribes from Spain and Provence, who were active in the beginning of the fifteenth century in northern Italy, and only a quarter of them are written in the Italian or Ashkenazic script. Since almost each of the manuscripts includes a notation of its estimated value, these estimates can be compared in view of the content of the books, the different script types, the writing material (parchment or paper), their dimensions and sizes and even their dates of production; such a comparison would allow us to draw conclusions as to the factors that determined their prices.
compiled in view of an auction, listing 156 books. 116 A detailed inventory of 103 books was inscribed, apparently between 1420 and 1430, at the end of a manuscript copied in Oppenheim in Germany in 1415.117 A library comprising 99 books, was bequeathed by Yo’av ben Eliah of Corregio in Tuscany to his seven sons, who split divided up his library in 1486,118 according to an inventory detailing the distribution of the books among the heirs, including an appraisal of the value of most items. In the town of Jaca in the Huesca province of northern Aragon inventories of twenty six private libraries, the largest of which contained 74 books,, were compiled in 1415.119 Moreover, two exceptional contracts inscribed in Latin were preserved in non-Jewish archives: One was a most detailed contract drawn in 1335 in Majorca between a scribe and a patron commissioning a de-luxe production of three decorated manuscripts;120 The other contract, drawn in Marseille in 1316, relates to the loan of a medical book for one year, and the lending of copying rights for a considerable sum.121 In the Middle East too, at least in Egypt, there were large private collections, as evidenced by the book lists preserved in the Geniza. Three twelfth-century inventories, which complement each other and whose beginnings and endings are missing, contain 153 books.122

Almost all the literary and documentary testimonies relate to books in private possession, produced as a private initiative, and to scribes hired by individuals in

116 The book lists were published in J.N. Hillgarth, Readers and Books in Majorca, 1229–1550, vol. 2, Paris 1991, pp. 434–442, and see, ibid. for previous publications of the second list. See also in his publication mentioned here below, n. 120 (pp, 297-315), regarding an inventory dated 1330 of Rafael Dayan’s library in Mallorca.

117 See I. Sonne, ‘Book Lists through Three Centuries’, Studies in Bibliography and Booklore, 1 (1953), pp. 55–76. This inventory is a rare example of a book list in Ashkenaz. and, moreover, it is unique among known private European books lists, being classified by topic and sub-topic, according to the following order: פוסקים, מדרש, ספרי פילוסופיה, לפי גדולה, ספרי פטרישיה, ספרי מתקרר, ‘תנ”ך, ומדרש,’ פסי מתלמוד, פסי סוף מתלמוד, פסי לוטם, פסיים שלם מתלמוד, פסי ב”ת מתלמוד, פסי ח”ת מתלמוד, פסי ח”ת. Not only was the listing of the books classified by topic, but under each topic or sub-topic it had been arranged according to an internal order from the comprehensive to the partial, as is customary in modern bibliography (see ibid., pp. 57-58). Furthermore, the Ashkenazic owner distinguished between three book sizes—large, medium, and small. For a unique terming of a handsome book in this list, see below, chapter 11, n. 11.


122 Allony, Jewish Library, no. 4. ibid., no. 70 (the first six lines of the list are missing) contains a record of an estate inscribed by the deceased’s son not earlier than the 12th, which included 112 books; no. 8 is a 13th-century list that enumerates 107 books.
order to producing copies of specific texts for their personal use. All the European book lists as well as some the Oriental ones were in fact catalogues of private collections or listings of inherited books. Many lists found in the Cairo Geniza were undoubtedly book dealers' sale catalogues, some of them indicating prices and attesting to a developed commerce. European literary sources attest to the fact that even books that were kept in synagogues and yeshivas had been copied or donated through private, rather than communal or institutional initiatives. The rather abundant European halakhic sources encouraging owners of books to lend them out and the stimulus that a number of communities in Ashkenaz provided for the purchase of books by granting tax exemptions at the rate of their value, not only attest to the great scarcity of books, but also reveal the private character of book ownership.

123 Among 114 lists collected by Allony in his book Jewish Library, there are, according to the editor’s classification, 29 inventories of private libraries, 10 lists concerning methods of classifying and cataloguing, 16 lists concerned with commercial matters (prices of books, deals through agents, etc.), 10 estates, 4 lists concerning book loans, 4 lists of books to be copied (one of these, no. 78, from the end of the 11th century is a list of numerous books being sent to Cordoba by a book dealer in the Orient who employed copyists – the last book in the list is The Book of Wealth) by Shemu’el HaNagid, a voluminous work in Judaeo-Arabic of which only a small fragment has survived - the copying of which was shared between 5 copyists whose names were mentioned, a kind of scripatorium!), 3 lists of the Babylonian synagogue in Fustat, and a list of Karaite books, 18 lists by the versatile抄ist and book dealer Yosef Rosh HaSeder, and more.

124 Rabbi Asher ben Yehiel (HaRosh), as mentioned, even approved of a dayyan (rabbinic judge) who fined for ten gold coins a day an individual who had refused to lend a book he owned, see above, no. 61. Assaf, BeOholey Ya’aqov, pp. 3-6. The lending of books was subject to private initiative in France and Germany. In a dispute about the pawning of books presented to Rabbenu Gershom (Gershom ben Yehuda Me’or HaGola), the pawner claimed that: ‘they were new books, and you studied with them and lent them to others and exposed them to smoke’. To this the pawnbroker who had given the loan responded: “I granted the loan on them, provided that they be used for studying and teaching and be lent to others’ (Responsa of Rabbenu Gershom, par. 66, cited in H.H Ben Sasson, History of the Jewish People, vol. 2, Tel Aviv, 1969, p. 80 (in Hebrew). For the copying of books by a copyist for the purpose of lending them, in Germany, circa 1200, see the mention in Sefer Hasidim: A new manuscript of this text has been found in the Cairo Geniza.

125 The shortage of scribes in Ashkenaz may be deduced from the responsum of Rabbi Meir ben Baruch of Rothenburg regarding a case in which a scribe, while being employed by a certain client vows to his next customer that upon completion of his current obligation he would render his services to him alone: “משעה ספרפפ של אברב סברה בכתב, כשנופל伝え במקרא, זה העיד ע”מ הוא מעשה, ששמעונות בין אלא עב אל משוער (Assaf, ‘Am hasefer’ [above, n. 109], p. 304). And in the Muslim lands, according to a letter sent by Labrat ben Moshe ben Sughmary, the dayyan of the town of Al-Mahdiyya, to Naharai ben Nissim of Fustat, who had asked him to arrange for the copies of the books composed by R. Nissim ben Ya’aqov Ibn Shahin, the leader of the Maghreb Jewry who migrated to Susa after the destruction of Kairouan in...
Books in communal possession were mostly codices of the Bible, originating in dedications of bequeathed estates. The Karaite custom of donating biblical manuscripts to their synagogues foundations is well attested by many dedication deeds in biblical codices of the Firkovich collection at the National Library of Russia in St Petersburg. In addition, there have been recent discoveries of numerous dedication deeds of exegetical and even philosophical works in Judaeo-Arabic, which were deposited by literati to be made available to the Karaite community. However, the practice of amassing biblical manuscripts in Middle Eastern synagogues was not confined to Karaites, as evidenced by a letter from the Geniza and from the inventories of books from rabbinic synagogues in Fustat. According to this letter, two hundred and thirty Bibles, one hundred small codices (apparently of the Prophets), and eight Tora scrolls, all looted from the foundations of the Jewish community in Jerusalem by the crusaders when they conquered the city in 1099, were redeemed in Ascalon in the summer of 1100. This said, amassing a great number of biblical (or non-biblical) manuscripts in synagogues does not seem to have been customary in the

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1057. Labrat writes, in Judaeo-Arabic, to inform his correspondent that he appointed someone to purchase parchment in Susa and have it delivered to a scribe, but no scribe was to be found, except for one schoolteacher who copies only occasionally. (M. Ben-Sasson, The Jews of Sicily, 825-1068 - Documents and Sources. Jerusalem 1991, no. 7, lines 10-13, p. 32 [in Hebrew]).

127 These dedications are coming to light thanks to the project of cataloguing the Judaeo-Arabic manuscripts of the Firkovich collection in the National Library of Russia in St. Petersburg, under the auspices of the Ben-Zvi Institute in Jerusalem. On dedications of Biblical commentaries, see H. Ben-Shammai, ‘Notes on the Peregrinations of the Aleppo Codex’, in Erets u-melo’a: The Jews of Aleppo: Their History and Culture, vol. 1, eds. Y. Harel, Y. Assis, M. Frankel, Jerusalem 2009, pp. 148-153 (in Hebrew). According to Haggai Ben-Shammai a number of Karaite dedications have been found in non-Karaite, non-biblical books as well (personal communication).

128 See S. D. Goitein, ‘New Sources on the Fate of the Jews during the Crusaders’ Conquest of Jerusalem’, Zion 17 (1952), pp. 132, 137, 141-142 (Goitein eventually published the second part of the document. For information about it see Haggai Ben Shammai’s article, above, n. 127, p. 146) and cf. ibid., pp. 132-133 on the comparisons Goitein drew between this letter and the inventories of Biblical books (and Tora scrolls) in the main synagogues of communities in Fustat and Cairo. The inventories of objects in the Babylonian Synagogue in Fustat, which had been kept in the synagogue of the Jerusalemite community in 1080, were printed in Allony’s Jewish Library, no. 80. This list includes some two dozen codices (some are parts of the same codex, exclusively of biblical texts, and all were dedicated by private persons or privately purchased. An instructive example of the dedication of a biblical text to the Karaite community for public reading is a long inscription preserved with a fragment of a few folios in MS St. Petersburg Eap. II B 225. The scribe who inscribed the dedication ended it with a regular colophon and, according to Karaite custom, used the encrypted alphabet אטב”ש to indicate his name: יאני טח”ם ש”ט תצג”ט ש”ט שלאף”ם <= נסי בן יהודה ביום שני בשבוע בחמשה ימים לחדש תשרי שנת אלף ושלש מאות ו…” Moses Reuben, ‘The Hebrew in the Geniza: Its Language and Literature’, in The Hebrew in the Geniza, eds. Y. Assis, M. Frankel, Jerusalem 2005, pp. 158-159. Paul Kahle published an identical dedication and colophon from MS St. Petersburg Eap. II B 22 (P. Kahle, Masoreten des Westens, vol. 1, Stuttgart 1927, p. 67), and see the transcription and discussion by Jacob Mann in his book Texts and Studies in Jewish History and Literature, vol. 1, Cincinnati 1931, pp. 134–135.
Western communities. The scarce literary testimonies from Europe relate to bequests in Germany of Pentateuch codices or commentaries on the Pentateuch and prayer books, meant mainly for teaching the young boys, and Tora scrolls for ritual reading. In a responsum he wrote in Spain, Rabbi Asher ben Yehiel advocated that “community books should be available to the poor of the town for studying, since it would be a fault if they were to hang around idly for lack of books”. Thus it seems that in both Germany and Spain, books which were in communal possession were destined for the education of needy pupils. Indeed, children in both countries had to bring their own books to school, as is evident from a responsum by Yehuda HaCohen, the head of the Mainz halakhic school in the second quarter of the eleventh century, and from a responsum by R. Zerahya HaLevy included in the responsa of R. Solomon ben Avraham Adret, known by the acronym RaSHBa). Such circumstances, in which even textbooks of the youngest students were private, elucidates in the best of ways the individualistic aspect of the production and consumption of Hebrew books in the late Middle Ages. Avraham ibn Daud writes in his Sefer haqabbala about R. Shemu’el HaNagid that he had scribes who copied the Mishna and the Talmud, and he used to donate them to students who could not afford to purchase them, both in Spain and in other countries (יהיו לו סופרים היו כותבים ונתן במתנה לתלמידים שלא היו יכולין לקנות משלהם בין בישיבות ספרד בין אחרות). Even such a hagiographic account, which cannot be regarded as

129 According to the Nuremberg Memorbuch; see Assaf, Mekorot, vol. 4, pp. 12-13.
130 Responsa, Vilnius edition 1885, Kelaf 6, par. 25 (in Hebrew).
131 The responsum is worded as follows: הלברamma התחכם וייל. זרוב העונסים בכול הספרים Flem הפורים עמו מתל עשה חכם ודיבר שניים רבים פרצורים לרשות בקה ליום מובחר או שכינויבי י”א ספריוס הם ממקום אחר וו חכם ק المتحל והחלה ספריוס הם ממקום אחר므로 בקה ליום מובחר בפיתורים והיו שניים רבים פרצורים ליום מובחר בליבם פיתורים והיו שניים רבים פרצורים ליום מובחר בליבם פיתורים. (my emphasis, M.B-A) (A. Grossman, “Rabbi Yehuda haKohen and his ‘Sefer ha-Dinim’, Alei Sefer, 1 (1975), p. 33 [in Hebrew]). See also the discussion by Kanarfogel in regard to Jewish education in the late Middle Ages. According to him, unlike the practice in Islamic countries – communities – especially in Ashkenaz – did not sponsor elementary education; teachers were hired privately by parents and even the yeshivas did not receive communal support. E. Kanarfogel, Jewish Education and Society in the High Middle Ages, Detroit 1992, pp. 33–65.
132 The text of the responsum is as follows: האיש בהלכה עליך נשאלת אשר רצה ... כהוشت ספריוס הוכח... הלברamma התחכם וייל. והוחלש הספרים בליבם פיתורים והיו שניים רבים פרצורים ליום מובחר בליבם פיתורים (my emphasis, M.B-A) (A. Grossman, “Rabbi Yehuda haKohen and his ‘Sefer ha-Dinim’, Alei Sefer, 1 (1975), p. 33 [in Hebrew]). See also the discussion by Kanarfogel in regard to Jewish education in the late Middle Ages. According to him, unlike the practice in Islamic countries – communities – especially in Ashkenaz – did not sponsor elementary education; teachers were hired privately by parents and even the yeshivas did not receive communal support. E. Kanarfogel, Jewish Education and Society in the High Middle Ages, Detroit 1992, pp. 33–65.
133 A. Ibn Daud, Sefer haqabbalah, ed. G.D. Cohen, Philadelphia, 1967. In his ‘Sipurei Venetsia’ (Venetian Stories) from 1517, Eliyahu Capsali of Crete - who lived in the region of Venice between 1508 and 1515 - narrates the private initiative (that was never to be fully realised) undertaken in the late Middle Ages in Brescia in northern Italy in order to finance the production of all the Talmud
historical evidence of events that had occurred a century earlier, and the alleged information reported there about books being supplied to yeshivot outside of Spain, which further undermine its credibility, unequivocally expose the reality of private ownership and use of textbooks rather than community initiative in reproducing books for students. The same can be deduced from two Latin documents from Spain – the first from 1328 in Aragon and the second from 1332 in Sevilla – indicating that well-to-do Jews used to either deposit books or pay for their purchase for students in the Batei midrash.134

Perhaps the only extant evidence to an attempt – which did not materialize - to initiate public financing for the copying and loaning of books appears in the introduction of R. Yitsḥaq ben Yosef of Corbeil (d. 1280) to his Sefer Mitsvot Qatan (Abridged Book of Commandments), composed in France in 1276/7.135 In a bold, unique step-by-step plan of action the author outlines explicitly the appropriate method for disseminating his text: Every community, he affirms, should finance the copying of his halakhic code and preserve one copy so that whoever wishes to copy or study it will be able to borrow it on a daily basis (וכל אשר ירצה להעתיק או ללמוד בו ישאלם ויחזירם בו ביום). He further states that if a representative of a community should have to stay in another town in order to copy the book, he would need to be reimbursed for his expenses from the public fund, and even the rates are prescribed.136 Apart from this unprecedented programme, aimed at the quick and controlled distribution of a tractates for the use of yeshiva students, and for lending <them books> (and making other books available to them):

יהו קרבו של מריהʾ יʾ ישוקטפוא פראנקו איש צדיק תמים היה בדורותיו ועשיר מאד. והיה דר בברʾ ישועה ירושלמי הנʾל, ומניהו שם לראש ישיבה <...> והיו לו יותר מארבעים בחורים מזרם תלמידים كثيرי מdehyה. והיה הרʾ יוסף הנʾל מאכיל ומ셔ים ומלביש את כל הבחורים היו משלו <...> עוד הגדיל לעשות וישם על לבו לכתוב כל המסכתות כתב יד קלף, גמרא פירוש ותוספות, וישכור את רʾ פרץ הסופר לכותבם לו ולתת לו לשכרו בשנה פרחים (היינו פלו־רינים) ל״ז ומזונותיו, ולכתוב לו ביום שעות ח׳, וביום ו׳ שעות ד׳, וישדר קלפים יפים מאד וגדולים, ובפעם אחד נתן לאומן עושה הקלפים פרחים חמשים, ויחל לכתוב בארבעה מסכתות, והיה חפץ אשר לא נעשה כן מעולם. וعينי ראו את יופיים שהובאו מהם קצת עלים בבנייזיאה (ונציה), שהובאו משלל ברישא והיו לי למופת. והיה בדעתו להקדישם לכל מי שיחפץ בהם ללמוד בהם ולהפקירם לעניים, והיו עושים חשבון כי אלו היו נגמרים היו עולים לו פרחים ת״ר אלא שעונותינו רבו וישימום לשלל כאשר נשללו היהודים האומללים בברישא cá quando. עוד היו לו כמה ספרים ואת הכל נתן בידי התלמידים ולא חשך מהם מאומה.

(Seder Eliyahu Zuta, eds. A. Shmuelevitch, S. Simonsohn, and M. Benayahu, Jerusalem 1976, p. 258; cited from a slightly different version, according to a partial edition by Furges, already by Assaf, Mekorot, vol. 2, p. 110 [in Hebrew]. The citation provided by Assaf was substituted in the new edition of the book (edited by Glick) and in its computerised database according to the text cited in the Shmuelevitch, Simonsohn, and Benayahu edition). This is a unique, unparalleled source providing information about a scribe’s work hours and his yearly wages.

135 On the date of its composition see recently S. Emanuel, Fragments of Tables: Lost Books of Tosaphists, Jerusalem 2006, p. 198.
136 Assaf, BeOholay Yaʿaqov, p. 13.
halakhic code and ensuring its standardisation, and apart from synagogue foundations and private donations, books were the property of individuals.

Indeed, as we saw above, book lists and inventories from the East and the West attest to the same reality. In the same way, the production of manuscripts was achieved through private initiative, as attested in various Geniza letters, and such were their distribution and sales, as seen in the list of book traders preserved in the Cairo Geniza. The private and individual nature of the production, ownership and use of manuscripts is clearly and indisputably manifest from the classification and analysis of all the colophons in Hebrew medieval manuscripts, namely some four thousands, which were assembled by the Hebrew Palaeography Project. According to these colophoned manuscripts only very few were produced for an institution or a community, while all the others were commissioned from hired scribes (some of which were undoubtedly only casual scribes) by private individuals for their own use, or copied by the individual users themselves. Even the few cases attesting to communal ownership do not actually challenge the individual character of the production and consumption of Hebrew books. In fact these few manuscripts, all of them liturgical, were commissioned neither by the community nor by an institution, but, as explicitly indicated in most of these cases, were dedicated by private individuals to the synagogue or to the community.

Perhaps the earliest example of the production of a book destined for the public is MS Oxford MS. Mich. 436, an undated mahzor copied in the late thirteenth or the beginning of the fourteenth century by a scribe whose name had surely been Ya῾aqov. The manuscript contains a colophon by the vocaliser, Yehuda, who stated that he had vocalised this mahzor for praying in public (in the synagogue): ואני יהודה הנקדתי זה המחזור להθקר להθקרבח לברא בעדה. In the absence of an owner’s name it is likely that the vocaliser meant that the mahzor was destined for the cantor in a synagogue rather than for a private person’s prayers. In connexion with this one should recall the first volume of the well-known Worms prayer book, copied at the beginning of 1272. This monumental, hefty, illuminated and illustrated Mahzor had certainly not been meant for private use. Yet, like other sumptuous German manuscripts

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137 This number includes undated colophons in manuscripts that have not been documented or located yet, but were recorded based on microfilms or catalogues. Some fifty colophons of manuscripts that have not survived were preserved in copies of later manuscripts.

138 Neubauer Catalogue 1025; see also the entry in the Neubauer & Beit-Arié Catalogue.
colophonied maḥzors, it had been copied upon the commissioning of a private individual. The colophon by the copyist of the Worms Mahzor might possibly allude to the fact that the childless owner wished to have the book made and left in possession of the public so that his departed soul might be exalted in prayer. The triple rhyme in Yiddish, inscribed by the scribe’s hand within the empty spaces within the conture of the letters of the initial word בדעתו, in fact the very first written evidence of this hybrid language, confirms this interpretation as it contained a blessing for whoever carried the Maḥzor to the synagogue. Whatever the case may be, it is clear that the production of this deluxe codex, which must have been intended for the use of cantors in the synagogue, was the product of private initiative and was kept by the person who had commissioned its copying, vocalisation, and illumination.

An explicit dedication of a maḥzor to a Ferrara synagogue was written by its scribe in 1469, and it seems this is the earliest dedication to survive in a non-Karaite book. The person who commissioned the book, Ya’aqov ben Elia, dedicated it to the synagogue so long as everyone Jew be allowed to use it there, but no one, neither “man nor woman”, be allowed to take it out of the synagogue unless permitted by those in charge. The earliest extant example of copying a codex explicitly intended for the public is dated 1363 and is related to a Karaite community. Indeed, Karaites had an old tradition of donating privately owned Tora scrolls and biblical codices to synagogue foundations. As a matter of fact, this case does not really fit our discussion since it concerns not a codex but a Tora scroll, obviously meant to be used in a synagogue. This ritual scroll, kept in St. Petersburg, is unique in that, unlike rabbinical ritual scrolls, it displays a colophon at its end. There the scribe indicated that he produced the scroll for Elijah ben Jacob and for his sister פ시스רא, so that it be dedicated to the

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139 For a detailed description, see Beit-Arié, ‘Worms’, pp. ix-xxvi. For the formulation of the colophon and its interpretation, see, *ibid.* p. xi.  
community of Kokkoz. From the end of the fifteenth century a colophon without its manuscript – which had presumably been a biblical book – has survived, copied in the Orient by a Karaite scribe who, in 1490/1, made the copy for an owner who dedicated it to the synagogue.

Two Yemenite manuscripts of the late fifteenth century were specifically inscribed for a synagogue, both of them in Sana'a. One contains the Hagiographa and, according to its colophon, was copied in 1484/85 by Yosef, son of Benaya who had been the most renowned scribe in Yemen, for the synagogue. However, at the head of the manuscript the scribe wrote an inscription in large letters, indicating the name of an individual who financed the copying. The other manuscript, a non-liturgical one (Maimonides' commentary to the Mishna in Judaeo-Arabic), there is mention neither of the private patron who commissioned the copying nor of the scribe. The short colophon only indicates that the copy was completed in 1496/97 for “the holy synagogue”.

No doubt, the direct evidence of colophons, which are authentic historical documents, more reliable than shifty literary texts, indicates that Hebrew books in the Middle

142 MS St. Petersburg Eap. I A 35 (Harkavy & Strack Catalogue, p. 220). The Sefer Tora was inscribed in Kokkoz, which may be identified with Kokk (Koikkos) in southern Crimea. Years later the scribe Yehuda ben Elijah of Adrianopolis was active in Crimea: he inscribed a dedication in a Tora scroll donated to the synagogue of the Karaite community in Solkhat (Stary Krym) in 1389/90 (MS New York, Columbia X893 B-776). Among non-Karaite Toras and other liturgical scrolls, I am familiar with only one later scroll of the Book of Esther ending with a brief colophon, though written at the end of the blessings copied after the text: MS Parma, BP 3318 (De-Rossi Catalogue 320, Richtler & Beit-Arié Catalogue [Parma] 414), whose copyist completed it in 1479/80 and signed his name with the acronym י"ץ, an abbreviation of the name of the famous scribe (and author) Avraham Farissol, whose copied Hebrew manuscripts are the largest in number. Avraham Farissol used this acronym in several colophons he wrote, and it should be read as אברם פריצול י"ץ. The blessing formula for a living person (perhaps ישמרו צורו? [may his Rock protect him], cf. the formula in chapter 2, section 1, Blessings), although attested initially in Ashkenazic colophons, was common in Italy especially in the latter half of the 15th century, and it was the blessing formula preferred by Farissol when recording his name, as evidenced in his 25 colophons. The fact that the scroll was ink-ruled (the margins were ruled in pencil), in the style that was common in Italy during the last decades of the 15th century and not in accordance with the halakhic requirement of colourless ruling, indicates that Farissol wished to make clear that this scroll was not intended for liturgical use in the synagogue, but only for following the reading, and therefore he was not deterred from inscribing a colophon after the blessings. On a early Sefer Tora with a colophon inscribed at its end see below, chapter VII, n. 31.

143 The person who commissioned the manuscripts for dedication to the synagogue, Shemu’el ben Yehuda HaCohen ibn Alcazan, is known to us as a Karaite sage who in 1502 copied three Judaeo-Arabic manuscripts for his own use (MS New York 1405, MS St. Petersburs Eap.-Apa6. I 1781, and MS St. Petersburg Eap.-Apa6. II 1868, which was copied in Cairo).

144 On the scribe Benaya and his family of professional copyists (sons, grandsons, and even great-grandson), see below, chapter 2, n. 141, as well as my note in Manuscrits médiévaux, II, 112*.

145 MS Jerusalem, Private collection of Prof. M. Benayahu (offered for sale by Sotheby’s auction house in New York, December 19, 2007); see the description of the manuscript in Codices hebraïcis, Part III, 118.

146 MS New York R 1624.
Ages were the product of individual and not communal enterprise. Even in the few cases in which books were produced for use in the synagogue they were not initiated or financed by the community but by individuals who donated them to the public.\(^{147}\)

It should be emphasised that the colophons in no way attest to the commissioning of books by book sellers. While book lists found in the Egyptian Geniza do confirm the existence of book dealers, there is hardly any evidence, not even in halakhic literature, of their presence in Europe.\(^{148}\)

The individual character of the manuscript book production as well as its consumption is solidly attested by the direct and indirect testimonies of some four thousand medieval colophons which indicate that at least half the manuscripts were copied for

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\(^{147}\) See the remarks by Robert Bonfil on the social standing of synagogues in Europe and their function as public libraries – statements founded, however, on rather scant evidence: R. Bonfil, ‘La lettura nelle comunità ebraiche dell’Europa occidentale in età medievale’, in *Storia della lettura nel mondo occidentale*, eds. G. Cavallo & R. Chartier, Rome–Bari 1995, pp. 174–176. Bonfil admits that documents concerning the depositing of books in synagogues are rare, and mentions a few: an inventory of books deposited in a synagogue in MS Vatican Urb. ebr. 22; a record of a bequest of a four volume Bible to the synagogue in Padua, published in 1907; and also Sonne’s view about a list of books from 1445, which, according to him, could be considered as a kind of Renaissance public library, a precursor to the library founded in 1452 by Cosimo de’ Medici: I. Sonne, ‘Book Lists Through Three Centuries’, *Studies in Bibliography and Booklore*, 2 [1955–1956], pp. 7–9.

These examples presented by Bonfil to ground his view invite the following comments: the book inventory in the Vatican manuscript is nothing more than a list of privately owned books that were deposited by the owner’s nephew in the synagogue, surely for temporary safekeeping: כל הספרים שאッシו ב”ב”ה הם מכמ”ר יצחק דודי יזיי”א מטיבול. The manuscript in which the books were listed was copied in 1433. The name of the copyist, who had prepared the copy for his own use, was erased in the colophon, but the name ייטשק was highlighted within the text, and therefore it appears his name was Yitsḥaq. Indeed, the name of the copyist of MS Firenze, Bib. Laurenziana Plut. 150, written in similar script, and which codicological features are identical to those of MS Vatican, and which was copied at around the same time (in 1433) is Yitsḥaq ben Yequ’ti’el, who wrote it for his own personal use. Yitsḥaq ben Yequ’ti’el was indeed the owner of many books – in MS Florence as well a list of books he owned was appended to the end: מערכות הספרים אשר הוצאו мяyyyyMMdd. The list of 33 books was published by Rothschild, ‘Listes des livres en Italie’, no. 1 (pp. 294-298). The list of books from 1445, published by Sonne, is simply one of many lists of a private library. The mere accumulation of biblical books in synagogues does not qualify synagogues as public libraries.

\(^{148}\) At least according to the search in the database of halakhic literature of Bar Ilan University’s Responsa Project, according to keywords such as ספרי. We should not be misled by the wording of the colophon in MS Parma Parm. 2406 (De Rossi catalogue 481; Richler-Beit-Arié 1242), copied by Yehji’el ben Moshe without indication of date, but around the fourth decade of the 14th century (according to MS Dresden, Landesbib. Msc. Ea. 140a, that he copied for himself in 1332 in Perugia, excluding the last two quires which he copied in Amandola, in Southern Italy), where he states having copied it for ‘a shop’ or ‘the shop’ in Amandola; ‘shop’ signifying a bank or money-lending business – as it was referred to by Italian Jews, and not a bookshop; see U. Cassuto, *Gli ebrei a Firenze nell’età del Rinascimento*, Firenze 1918, p. 168. I suggest that the copyist was commissioned by proxy for a money-lender whose name was unknown to him. See as well the vocaliser’s colophon dated 1468 in MS Oxford MS. Can.Or. 22, in which he stated that he received his pay from Yehoshu’a, manager of the bank in Castello; see N. Pasternak, *Together and Apart*, p. 423, no. 10.
self-use. In fact, only twenty nine percent of the colophons contain explicit or implicit indications that the manuscript had been produced by its copyist for his or her own use. Evidence for self-production is present already in the colophon of one of the earliest dated manuscripts, copied in Gaifa in Egypt in the year 953/4, but the numbers of extant dated manuscripts which were copied for self-consumption began to increase from the middle of the thirteenth century and onward. Thirty eight percent of the colophons state explicitly that the manuscripts had been commissioned by private patrons to be copied by hired professional, semi-professional, or casual scribes; thirty three percent of these thousands of colophons do not contain an indication as to the copy’s destination. The argument I wish to propose is that in most instances where copyists did not state in their colophons whether the manuscript was intended for his/her private use or for the use of another party, or in cases in which a neutral statement would disclose no information on the copy’s destination – the majority of such books would have been user-produced. It is hardly conceivable that a hired scribe would refrain from mentioning in his colophon the person who had contracted him for the copying for such mention had legal significance too, as proof of possession of the valuable object. And, on the other hand, it stands to reason that a learned individual and certainly a learned scholar copying for self-use would not necessarily bother to disclose his or her identity.

Notwithstanding, it is likely that not all unaddressed colophons were by persons making copies for themselves and one can hardly surmise that some sixty-two percent of the manuscripts were meant for self-consumption. Some of these manuscripts, especially those containing highly demanded and much-used texts, such as Bibles and prayer books, might have been prepared by professional scribes even without prior commissioning, on the assumption that they would be purchased by chance.

149 These dates pertain to all the colophons, as explained above, n. 137.
150 In calculating the ratios of the destinations, secondary copyists who did not provide their own colophon were not taken into account. Apparently they could be defined as copyists writing for others, however for determining the destination of a manuscript, the testimony of the main copyist takes precedence. On the other hand, this calculation also includes manuscripts copied for a relative, the proportion of which amounts to more than three percent. It would seem that these manuscripts should be classified as self-produced manuscripts. When the self-destination of a copy is not made explicit in the colophon, it may be deduced mainly from the fact that the conventional wishes for the owner of the manuscript – that he may enjoy the privilege of studying the book, along with his offsprings, and so on – are self-addressed, and also, based on personal notations added by the copyist, such as personal records like of the births of his children. The exact data presented below are based only on the most reliable corpus of colophons in the dated manuscripts documented in situ.
151 Of a copy of 4 books of the Prophets, with Babylonian vocalisation and cantillation, only two damaged folia have survived in the Cairo Geniza. See Codices hebraicis, Part I, ms. 9.
buyers or perhaps book dealers. Indeed, an explicit example of such circumstances survived in the colophon of MS Rome, Biblioteca Casanatense 3104, a Spanish fifteenth-century manuscript containing a kabbalistic compilation: here we read the scribe’s statement that he copied the book for anyone who would purchase it (כתבתי ה总书记在 אשכנצ’ עם כללו לימי יושריא נא אשתרון בר נ…” 152). Likewise, one can assume that if a renowned and prestigious artist-scribe like Joel ben Simeon copied and illustrated a Passover Haggadah without sealing it with a colophon, it had obviously not been commissioned by a specific patron but sold to a book dealer or possibly commissioned by him beforehand. 153

Similarly, if we find an unaddressed manuscript had been inscribed by a professional scribe who had been copying manuscripts for individuals other than himself, it would seem highly probable that the manuscript in question were copied for a chance buyer. While it stands to reason that upon selling a manuscript to chance buyer the scribe would add a colophon attesting to the sale and ownership, it is equally possible that eventually the book would sold by someone other than the scribe. Indeed, it is possible to interpret another two dozen unaddressed colophons as having been inscribed for chance buyers, mainly by referring to abstract patrons 154 or by the empty space left for

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152 See also Beit-Arié, ‘SFARDATA’, pp. 167-168 (and cf. idem, Makings, pp. 43-33); idem, ‘Colophons’, pp. 500-501. Naturally, the data in these publications would vary somewhat because of the progress achieved in the documentation. The distribution of these data is not uniform throughout all regions. In Ashkenaz, for example, only 21% of colophonated manuscripts were self-produced (in the 13th century only 10% and in the 15th century – 27%), 43% were commissioned, while 35% were unaddressed. In Italy, 44% of the copies were commissioned. In Yemen only 18% of the colophons are unaddressed and only 13% of the manuscripts were made for personal use, while the proportion of manuscripts that hired scribes wrote for others was as high as 72%! This said, based on the premise put forward below, that most of the unaddressed manuscripts were copied by learned individuals for their own use, the ratio between commissioned manuscripts copied by hired scribes and those produced by抄ists for personal use are quite similar in all regions, with the exception of Yemen, where more than two-thirds of book production were commissioned books made by hired scribes. The rate of unaddressed manuscripts together with those made for personal consumption in all regions (except Yemen) ranges from 56% (in Italy and Ashkenaz) to 78% (in the Middle East); in Spain and Byzantium their rate is 68%. 153

153 Three of nine extant colophons written (and illustrated) by Joel ben Simeon in Germany and Italy in the years 1449-1485 are unaddressed; to these should be added three uncolophoned manuscripts that have been unequivocally identified as his. All of them contain the texts which were most popular or in-demand, namely, haggadot or prayer books. Therefore, the information in this regard should be corrected in my article M. Beit-Arié, ‘Codicological Description and Analysis of the Washington Haggadah’, in The Washington Haggadah: A Facsimile Edition of an Illuminated Fifteenth-Century Hebrew Manuscript at the Library of Congress Signed by Joel ben Simeon – Commentary volume, ed. M.M. Weinstein, Washington 1991, pp. 105–106 [=idem, Makings, pp. 216-271]. MS Jerusalem Heb. 4° 1384, which has since been identified as his own doing, should be added to the manuscripts listed, ibid. pp. 127-128 [=pp. 238-293]; see below, chapter 2, n. 108.

154 As, for instance: יopportunità יודהتصوير בספרי הקדשים וכן למני הכהנים (a manuscript of Recanati’s commentary, copied in Bologna in a Sefardic script in 1399, in possession of the Recanati family, Tel Aviv).
inserting their names at a later stage, or by the addition, by the scribe of an unaddressed manuscript, of a deed of sale mentioning the buyer’s name, shortly after the date of the colophon.  

If our assumption is correct then – whether most of the unaddressed manuscripts were user-produced copies, or whether they were produced in view of selling them to chance buyers – the high rate of self-production in Jewish societies as reflected in the corpus of colophons, namely, at least half of the medieval books, is unequalled in

155 Avraham ben Moshe of Rovi, for example, wrote a long unaddressed colophon at the end of a manuscript he copied in Byzantium in 1402. Four months after writing the colophon he sold the manuscript and inscribed a detailed sale deed at its end (recently the manuscript was in the possession of a book dealer in Jerusalem). In MS Paris Hébreu 237 (Codices hebraici, Part I, 95) also copied in Byzantium (Kastoria in Macedonia, Greece) in 1437, and contains sermons on the Tora by Joshua Ibn Shuaib, the scribe noted as follows: מי שספכט אבותיו והשיך תורתו אלחוט וב אלחוט בניינוمبני עצום עיס אלחוט. The unspecified mention of the manuscript’s addressee indicates that the copy had been prepared for a chance buyer, or that the scribe had been commissioned by a middle-man without knowing the name of the buyer. The scribe subsequently added at the end of the manuscript a kind of brief address to Avraham, indicating that he had sold the manuscript to him, thus presenting him as one who had commissioned it (or perhaps he was the anonymous individual who had commissioned it in the first place). A flowery, rhymed undated colophon, which meaning remains obscure, at the end of MS Vienna, ONB Cod. Hebr. 38 (Schwarz Catalogue [ONB] 13) – a liturgical reading corpus containing, as customary in Ashkenaz, a Pentateuch, Scrolls, and haftarot (readings from the prophets), copied in Germany in the 14th century – seems also to allude to a copy prepared in advance for a chance buyer, from whom the copyist expects to be paid: מיסר, מיסר, ונך, ונך, וך זיב עליום, וך זיב עליום. An example which may attest to the copying of a text for a chance buyer, even at a later period, appears in a colophon at 1582 in MS Paris Hébreu 865, copied by Asher ben Kalonymus in Ashkenazic script. At the end of a copy of the work ‘Asis rimmonim’ – an abridged version of Moshe Cordovero’s Pardes rimmonim composed by Shemu’el Gallico, and first printed in 1600/1 – the copyist wrote that it had been written for anyone who might desire to buy it (אליש יאני, בשיר בקבר קלפת).

156 In this regards the halakhic ruling by Rabbi Asher ben Ye’hel should be taken into consideration for it may reflect the basic attitude of rabbinic scholars in Germany, France, and Spain toward self-copying, which may have been accelerated for halakhic reasons. In relation to Maimonides’ ruling that every Jew is commanded to write his own Tora Scroll (Mishne Tora, Hilkhot Tefillin u-Mezuza ve-Sefer Tora 7:1), based on Rava’s statement cited in the Babylonian Talmud, Sanhedrin 21a (cf. Rav’s statement in Menahot 30a), Rabbi Ye’hel re-interpreted the commandment on early generations to write a ritual Torah Scroll as a contemporary commandment to write a Pentateuch in the form of a codex, including the writing of talmudic and exegetical literature for study purposes: זכרו בדורות ראשונים יכתבו ספר תורה ואינו כתיבני ספר תורה כזריא כל ישראל אשר ידו משגת לכתוב חומשי התורה ומשנה וגמרא ופירושי’ להגות הוא ובניו עד סוף הדורות. WHICH IS AN ABBREVIATION OF THE COMMANDMENT TO WRITE A PENTATEUCH AS A RITUAL SCROLL. FOR THE COMMANDMENT FOR EVERY PERSON TO WRITE A SEFER TORAH, SEE Y.S. Shpigel, Chapters in the History of the Jewish book: Writing and Transmission, Ramat Gan, 2005, pp. 21-22, which, however, does not cite Rabbi Ye’hel’s instructive statements. Sefer hahinukh similarly expands the applicability of the commandment: עד בן אדם, אמרו, שקרו ארץ ישראל את ספר תורה, שאוים. Sefer hahinukh (ed. H.D. Chavel, Jerusalem 1962, passage 613). Regarding this, J. Hacker noted in his article ‘Public Libraries of Hispanic Jewry in the Late Medieval and Early-Modern Periods’, in From Sages to Savants: Studies Presented to Avraham Grossman, eds. J. Hacker. B.Z. Kedar, and J. Kaplan, Jerusalem 2010, p. 268 (in Hebrew). On the identification of the author, who apparently composed this work at the beginning of the 14th century in the name of the buyer. The scribe subsequently added at the end of the manuscript a kind of brief address to Avraham, indicating that he had sold the manuscript to him, thus presenting him as one who had commissioned it (or perhaps he was the anonymous individual who had commissioned it in the first place). A flowery, rhymed undated colophon, which meaning remains obscure, at the end of MS Vienna, ONB Cod. Hebr. 38 (Schwarz Catalogue [ONB] 13) – a liturgical reading corpus containing, as customary in Ashkenaz, a Pentateuch, Scrolls, and haftarot (readings from the prophets), copied in Germany in the 14th century – seems also to allude to a copy prepared in advance for a chance buyer, from whom the copyist expects to be paid: מיסר, מיסר, ונך, ונך, וך זיב עליום, וך זיב עליום. An example which may attest to the copying of a text for a chance buyer, even at a later period, appears in a colophon at 1582 in MS Paris Hébreu 865, copied by Asher ben Kalonymus in Ashkenazic script. At the end of a copy of the work ‘Asis rimmonim’ – an abridged version of Moshe Cordovero’s Pardes rimmonim composed by Shemu’el Gallico, and first printed in 1600/1 – the copyist wrote that it had been written for anyone who might desire to buy it (לשמיש יאני, בשיר בקבר קלפת).
other civilisations of the codex, in particular in Christian societies. Moreover, the possibility that a large proportion of the tens of thousands of uncolophoned Hebrew manuscripts preserved in their entirety were also user-produced cannot be precluded. If this hypothesis is correct, then the phenomenon of self-production in Jewish society was even more prevalent. And yet, it must be stressed that the distinction between the learned self-copyist and the hired scribe becomes blurred in cases in which self-copyists also (at least at a certain stage of his career) made a living by copying for others, as is evidenced in quite a few manuscripts (in Italy especially), or when scholars also served as hired scribes, as in the exemplary case of Yeḥi’el ben Jekuthiel ben Binyamin HaRofe – a late thirteenth century Italian author, who copied the Leiden Universiteitsbibliothek’s copy of the Palestinian Talmud as well as other manuscripts.\(^{157}\) Indeed, these data reflect the degree of literacy in Jewish society, and moreover they also contain far-reaching implications for understanding the nature of transmission of the Hebrew text. No doubt the colophons provide evidence that the scholars and literati who copied books for their own use did not hesitate to imprint their personal stamp on the texts, while intervening consciously and critically in their transmission.\(^{158}\) It is perhaps possible to use the term ‘copyist’ to designate those who would copy for their own use and to use the term ‘scribe’ for a hired/paid/salaried copyist, whether a professional, semi-professional, or a casual one.

Barcelona, and was a disciple of Shelomo ben Adret (RaSHBA), see the references in J.D. Galinski, ‘On Popular Halakhic Literature and the Jewish Reading Audience in Fourteenth-Century Spain’, JQR, 98.3 (Summer 2008), p. 319, note 44.

\(^{157}\) See below, chapter 13, following the reference to n. 40. Also worthy of consideration are Nurit Pasternak’s findings regarding the blurring of the distinction between producer and consumer in Hebrew book production and consumption in late 14th century Italy and especially in the 15th century, when individuals copying for themselves or for relatives, or even for their livelihood, eventually would also commission hired scribes, see N. Pasternak, ‘The Judaeo-Italian Translation of the Song of Songs and Ya’aqov da Corinaldo’, Materia Judaica, 10 (2005), p. 275; Pasternak, Together and Apart, pp. 89-94; idem., ‘Who Were the Hebrew Scribes the Hebrew Scribes in Renaissance Italy?: A Short Review of their Manifold Roles’ in Manuscrits hebreux et arabes: Melanges en l’honneur de Colette Sirat (cf. above, n. 95), pp. 29-37.

\(^{158}\) See below, chapter 13, in the section ‘Personal production and its impact on the transmission: the scholarly copying as against the duplication of texts by hired scribes’. See also Beit-Arié, ‘Publication of Literary Texts’. 
Tables 11-13: Distribution of production destinations and the ratio of self-production versus commissioned production

For the basis of the statistical calculations in this book, see above, in the introduction, the section titled ‘General statistics of the database’ (preceding Table 5).

Table 11: Regional distribution of production destinations of manuscripts dated until 1540

<table>
<thead>
<tr>
<th>Zone</th>
<th>For self-use or for a relative</th>
<th>commissioned</th>
<th>Unknown destination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Sefarad</td>
<td>203</td>
<td>34</td>
<td>191</td>
</tr>
<tr>
<td>Ashkenaz</td>
<td>77</td>
<td>21</td>
<td>157</td>
</tr>
<tr>
<td>Italy</td>
<td>289</td>
<td>29</td>
<td>439</td>
</tr>
<tr>
<td>Byzantium</td>
<td>100</td>
<td>36</td>
<td>90</td>
</tr>
<tr>
<td>Orient</td>
<td>108</td>
<td>27</td>
<td>86</td>
</tr>
<tr>
<td>Yemen</td>
<td>13</td>
<td>10</td>
<td>93</td>
</tr>
<tr>
<td>Unidentified</td>
<td>6</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>796</td>
<td>29</td>
<td>1065</td>
</tr>
</tbody>
</table>

Table 12: Chronological distribution of production destinations in manuscripts dated until 1540

| Period | For self-use or for a relative | commissioned | Unknown destination | Total corpus | in |
|--------|--------------------------------|--------------|---------------------|--------------|
|        | #     | %  | #     | %  | #     | %  |          |    |
| 894/5  | 0     | 0  | 1     | 100| 0     | 0  | 1        |    |
| 901-1000 | 1   | 9  | 7     | 64 | 3     | 27 | 11       |    |
| 1001–1100 | 6  | 15 | 13    | 33 | 21    | 53 | 40       |    |
| 1101–1200 | 10 | 15 | 15    | 22 | 43    | 63 | 68       |    |
| 1201–1300 | 49 | 20 | 112   | 46 | 83    | 34 | 243      |    |
| 1301–1401 | 187| 31 | 230   | 38 | 180   | 30 | 600      |    |
| 1401–1501 | 414| 29 | 570   | 41 | 418   | 30 | 1406     |    |
| 1501–1601 | 129| 32 | 117   | 29 | 162   | 40 | 408      |    |
| Total   | 796   | 29 | 1065  | 38 | 910   | 33 | 2777     |    |
Table 13: Self-production versus commissioned production

Assuming that most unaddressed manuscripts were copied for self consumption, they were counted in this table together with manuscripts produced for self use or for a relative.

<table>
<thead>
<tr>
<th>Zone</th>
<th># no. of manuscript</th>
<th># %</th>
<th># %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sefarad</td>
<td>404</td>
<td>68</td>
<td>191</td>
<td>32</td>
</tr>
<tr>
<td>Ashkenaz</td>
<td>203</td>
<td>56</td>
<td>157</td>
<td>43</td>
</tr>
<tr>
<td>Italy</td>
<td>550</td>
<td>56</td>
<td>439</td>
<td>44</td>
</tr>
<tr>
<td>Byzantium</td>
<td>187</td>
<td>68</td>
<td>90</td>
<td>33</td>
</tr>
<tr>
<td>Orient</td>
<td>309</td>
<td>78</td>
<td>86</td>
<td>22</td>
</tr>
<tr>
<td>Yemen</td>
<td>36</td>
<td>28</td>
<td>93</td>
<td>72</td>
</tr>
<tr>
<td>Unidentified</td>
<td>17</td>
<td>65</td>
<td>9</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>1706</td>
<td>62</td>
<td>1065</td>
<td>38</td>
</tr>
</tbody>
</table>

It is impossible to discuss the individual mode of production of the Hebrew book while overlooking two phenomena which may appear to have been collective copying. The first is that of the multi-handed manuscripts and the second – that of scarce amount of manuscripts copied in yeshivot and batei midrash. Despite the compelling testimony of colophons regarding the private and personal production of books – either by scribes hired personally by private patrons or by means of copying for oneself, nine percent of the dated codices until 1500 (and somewhat less until 1540) have been found to have collectively been copied by several scribes.159 It is not unlikely that the incidence of multi-handed manuscripts among the tens of thousands of undated ones is even higher. In such manuscripts we find anywhere between two to seven hands, but usually no more than three. The proportion of multi-handed manuscripts is greater in Ashkenaz, and lower in the Middle East, particularly in Yemen.

159 On this phenomenon and the ways that it enables us to distinguish and differentiate sharing hands see below, chapter 10.
Do these copies imply despite of the absence of historical documentation, some kind of institutional or collective production of books? Do they attest to the existence of multi-scribed ateliers which produced and marketed books on a large scale? It seems that both possibilities should be rejected, the main proof being that multi-handed copies are found among both commissioned and owner-produced copies. If we consider most of the unaddressed manuscripts as owner-produced ones, we shall find that shared copying was more common in manuscripts that one copied for oneself. No wonder, for the value of copies that lacked uniformity was diminished, at least in Ashkenaz. Rabbi Meir ben Baruch of Rothenburg, in a responsum to the question whether a scribe hired to copy a whole book was allowed to interrupt his work, expounded why he could not do so:

אפים פעול הוא שהשכירו לזמן מרובה אעפ”כ אני זחל
לחוות ובו הוה ילד שגרר ומעל תפר שים שמה המשיח חכימות.

160 Namely, the halakhic ruling states that introducing a second hand in the copying decreases considerably the book’s value. Moreover, almost without exception, additional hands which joined the main scribes were not alluded to, let alone named, in the colophons of multi-handed manuscripts. It appears therefore that the anonymous copyists who shared the work were relatives of the senior copyist, who wrote his personal colophon at the end of the book, or apprentices – in the case of copies by professional hired scribes – or relatives and pupils of scholars who needed a copy for their own use.

161 The colophon of MS Oxford MS. Opp. 418 (Neubauer catalogue 1595), which was copied later at the time of the spread of the printing press in Roseheim in Alsace, is instructive: the third copyist’s
During the fifteenth century some two dozens manuscripts were copied in yeshivot (or batei midrash), most of them Sefardic. The majority of these were copied in Spain, all but one dating from the second half of the century, before the expulsion, a few were copied in Southern Italy, and, after the expulsion from Spain, in Morocco and Palestine. Nonetheless, they do not undermine the basically individual

account of hiring a relative to take over the unfinished work by his deceased father, then completing the copying himself sheds light on multi-handed manuscripts and on the absence of scriptoria in Jewish society: סליק ספר מס쓰 מתרדר... וחברא אבר מורי החיתות לתבות או... רכיב ברוח מי היווהalmah,老龄化 הגשון מני אלוהים המלך בkills דע השכרות גאזא ביאר בירוא החיתות תפאר... לחתות עם השירס... יושב התמה מני אלוהים המלך בkills אבר מורי... וחברא התמה מני אלוהים המלך בkills. Indeed, three different hands can be identified in the manuscript: fols. 8-86 (the father’s hand), 87-188 (the hired relative), 189-357 (the son). This late colophon reflects the private and personal character of Hebrew book production – self production and enlistment of family members to collaborate. MS London Or. 1084 (Margoliouth catalogue 920), which contains a selection of the writings of Yitshq ibn Latif, illustrates a similar phenomenon of a self-copyist hiring a professional scribe to complete his copy: fols. 18r-56r were copied by Binyamin ben Yo’av, who copied for himself in a fairly sloppy and disorderly semi-cursive Italian script (the ruling of the manuscript was produced by folding the quire folia) and finished copying in 1413 (according to the colophon he wrote on fol. 55v). After copying fol. 56r he changed his mind, stopped writing at the end of that folio and left the final folio of the quire empty (fol. 57), but on the verso he wrote a rhymed colophon describing the time pressures that led to the hiring of a copyist: ויי יכרצים ספר נבון ומרומא עד י瘪ו התמה מספרי יזיר עד יבר רוחים, וציון היר לי חיות. Indeed, the copying continues (fols. 58r-95v), on separate quires numbered consecutively following the quires copied by the manuscript owner (the paper contains identical watermarks which are different from those of the first section). This part was inscribed in a semi-cursive Sefardic script, and was completed within the same month. The professional scribe did not indicate his name in the colophon but his unique writing and his graphic habits are recognizable in a number of copies – all anonymous – copied in Bologna between 1397 and 1401 (hence his nickname assassinato bolognese in Stfardata). The owner-copyist Binyamin ben Joab copied MS Paris Hébreu 814 in an identical script about a year before while in jail in Bologna (See Manuscrits médiévales I, 79). Another example of handing over the manuscript to be completed by a hired scribe is MS Paris Hébreu 162, a collection of commentaries on Prophets and Hagiographa, copied in Italy in the early 14th century (before 1341/2). At the end of the commentaries to the Prophets, on a blank page (fols. 174v), a brief text describes the transfer of hands in the copying process: דל י"א שומרי אבר וייב קובא מני טבש רא"א ביד אבר. This manuscript was copied in Italy in the early fourteenth century and contains the commentaries to the Prophets, the first section). This part was inscribed in a semi-cursive Italian script (the writing at the end of that folio and left the final folio of the quire empty (fol. 57), but on the verso he wrote a rhymed colophon describing the time pressures that led to the hiring of a copyist: ויי יכרצים ספר נבון ומרומא עד י瘪ו התמה מספרי יזיר עד יבר רוחים, וציון היר לי חיות. Indeed, the commentaries for the Hagiographa (fols. 175-288, which comprise eleven quires, according to a new quire numbering – and not nine as indicated in the text) are written by a different hand, whose name is disclosed on fol. 245v by the acrostic כה. This example contains information otherwise rare in European Hebrew sources about the fee for a professional scribe calculated by the quire. This method for calculating the fee of a professional scribe is mentioned in Sefer Hasidim as well, describing a discreet way to give alms by increasing the fee per quire paid to a needy scribe: אדם צרו להתרבע. Indeed, the manuscripts from outside Spain mentioned by Riegler (ibid., p. 415, n. 22) should be added a manuscript copied in Montalto in Italy in 1493 and two manuscripts copied by one scribe for one owner in Kashan (Iran) in 1494 and 1496 in the bet midrash of Rabbi Hashem ben Shemu’el HaLevy. The fact that a number of manuscripts had been copied in synagogues appears to be irrelevant to this discussion. These manuscripts were copied for private use and it seems that their copyists found this a convenient venue in which to undertake their work. On two of these, copied by a single scribe in Seville, see Manuscrits médiévaux III, 3 and my notes, ibid.
character of Hebrew book production and consumption: Almost all of these manuscripts were copied by single hands, that of yeshiva students, either for themselves or by private commissioning (in three cases for the head of the yeshiva), and they do not differ from other manuscripts in which copyists generally did not indicate the place of copying. In fact, the scarcity of manuscripts copied in talmudic academies it can be inferred that these did not serve as centres of copying. In addition, the fact that the manuscripts were not copied for the yeshiva, except for those copied for the head of the yeshiva, reinforces the individual facet. Indeed, a few multi-handed had been copied in those centres of learning, tempting us to regard them as collective products of a scriptorium of some kind of centres of learning. Yet the phenomenon of a multi-handeded production should not be seen as limited to these manuscripts only and in any case the evidence is so negligible that we must refrain from embarking on such conclusions.

It seems that the conclusion to be drawn from textual sources and documents as well as from the large corpus of colophons found in the extant medieval manuscripts is unequivocal: that the production of Hebrew books in the Middle Ages had never been the product of an institutional initiative, be it by the community, by the spiritual leadership or by centres of learning, but always the outcome of private enterprise. They were no scriptoria in centres of Tora learning and no commercial ateliers which manufactured and marketed books on a large scale. Book production and text reproduction were performed by individuals, either professional scribes hired by individuals, or scholars and learned individuals copying for their own use. Both would sometimes be assisted by subordinate copyists—presumably relatives or the senior scribe’s pupils. Like the yeshivot (the Jewish learning centres equivalent to Christian monasteries, cathedral schools and universities) which, in Western Europe were private institutions, owned by the rabbis heading them and having no formal affinity to the community, so were the production, dissemination and keeping of books a private enterprise. Like the autonomy exercised by each Jewish community, especially in Europe, and the lack of centralised civic or halakhic, let alone political, authorities in the dispersed Jewish society of the Middle Ages, so were the texts

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163 I am grateful to Mordecai Breuer for enlightening me concerning the status of yeshivot in Western Europe and their affinity with the character of Hebrew book production, which differs from the character of Latin book production. See also the remarks by Kanarfogel (above, n. 131) on the relationship of the yeshivot to the communities.
reproduced and propagated without supervision or monitoring, by private channels, and, naturally, no standardisation of their versions could have been imposed.\textsuperscript{164} The individual nature of book production and consumption did not give rise to public libraries even at the end of the Middle Ages, apart from modest collections of donated or bequeathed biblical and liturgical books in synagogues. Hebrew books were not produced and kept in centralised and collective frameworks, as Latin books were in ecclesiastic institutions, nor were they assembled and preserved in institutional libraries but in many private collections especially in what concerns the Middle East (in earlier periods\textsuperscript{165}), then Italy and Spain. Making, using and collecting books in Jewish societies was indeed an extraordinarily private undertaking.\textsuperscript{166} 

A number of European sources relating to book production cited at the beginning of this section provide some information about the fees of hired scribes and their work procedures. Thus we found evidence about the hiring of contractors, contracting fees calculated per quire in late fourteenth century Crete,\textsuperscript{167} global annual fees (including a

\textsuperscript{164} It would appear that the absence of centralisation of text production and the lack of critical supervision of the text versions and their dissemination was continued in the print era in regard to works that never saw print, especially works of Kabbala or Hasidism. An exception was the private copying enterprise initiated and managed by Moshe Zacuto for the purpose of distributing uniform and supervised copies of the writings of Rabbi Yitshaq Luria, as recorded by Ḥaim Vital, and for the purpose of disseminating his own writings, as Yosef Avivi uncovered in his article ‘Solet neqiya – nafato shel Rabbi Moshe Zakut’, Pe’amim, 96 (1993), pp. 96-106 (in Hebrew): ‘He proposed to his students the texts to be copied for their use, he selected the suitable copyists, he oversaw the copyists’ work, he supervised the quality of the copying, he transmitted the payments, and he sent the manuscripts to their destinations’ (ibid., p. 97 [trans. I.G.]).

\textsuperscript{165} Menahem Haran has commented that in earlier periods the canonisation of the Bible (and of the Oral Law) resulted in the absence of libraries in Jewish communities. According to him, libraries, mostly private ones, began to appear only in the Geonic period when manuscripts of parts of the Bible and its translations, of parts of the Mishna and Talmud, as well as manuscripts of halakhic literature in its formation stages – began to abound. See his article ‘On Archives, Libraries and the Order of the Biblical Books’, in The Bible in the Light of its Interpreters: Sarah Kamin Memorial Volume, ed. S. Japhet, Jerusalem, 1994, p. 229-234 (in Hebrew).

\textsuperscript{166} For literary evidence indicating that the private libraries of dignitaries in Castile and Aragon in the later 13th and early 14th century, and even more manifestly among Sephardic Jews in Salonika during the 16th and 17th century served as public libraries for the use of scholars and their disciples, see J. Hacker, Public Libraries (above, n. 156). The literary evidence presented by Hacker according to which these ‘midrashim’ were also venues for the copying of books for private libraries open to the public, initiated and financed by those dignitaries, or indeed scriptoria of sorts, still require validation from evidence from the actual extant manuscripts from those regions and those periods. One would expect that such a reality should have left some traces in the thousands of extant colophons inscribed before 1540 and documented in the Hebrew Palaeography Project, and it is unlikely that scribes hired by dignitaries would not mention this fact explicitly in the colophons of the copies they produced. The only dignitary mentioned by Hacker, about whom two colophons testify that two manuscripts were copied for him – one in Salonika in 1509 and the other in 1516 – is Shemu’el ben Meir ben Ban Benest, see ibid. p. 273, n. 46.

\textsuperscript{167} That the fee for a scribe’s work in Candia (Crete) was calculated per quire can be learned from a letter written in Damietta at the end the 15th century by Elia ben Elyaqim of Chanea to Moshe ben
subsistence allowance), and weekly work hours in northern Italy in the early sixteenth century. More information about scribes’ fees in the Islamic lands may be found in the Geniza letters, and especially in the studies by Goitein and Gil noted above. A letter written between 1020 and 1050 by Shlomo ben Yosef HaCohen of Dalton in the Galilee, who copied books for Rabbi Hillel of Tiberias, is particularly instructive. It suggests that the calculation of the scribe’s pay was based not only on the number of quires, but also on the number of characters, just like in modern times. A document cited by Goitein indicates the daily fee of a scribe who had copied a book of the Prophets under the supervision of his employer, in the first half of the eleventh century – presumably in a monumental script in the style in which Biblical codices were copied at that time – around one dirham per day, and, according to Goitein, this wage was equivalent to half the wages of an untrained laborer! This evidence regarding the pittance earned by a scribe in the Middle East reflects his inferior economic status in society, paralleling the inferior social and intellectual status of the Yehuda in Alexandria (MS Oxford. Heb. C. 72, fol. 14): כַּכְּנָן תִּצְאֵן אֶחָד בּוֹסֵר בּוֹ מָרֵסֵלָשׁ בְּקֶמֶרִי הַשָּׁבֶחָה שֵׁל לְוַיִּי מַגִּים אֲשֶׁר הָיוּשׁוּב שֵׁל לְוַיִּי מַגִּים בְּהַמּוֹצָא. הָיוּ יִזְרָאֵל חֲתוֹנִים וְיִזְרָאֵל בְּתוֹבֲרֵי הָאֲשֵׁרָה וַיִּצְאֵן בְּחֵסֵנֶיהָ בַּקְּפָלָה שֵׁל לְוַיִּי מַגִּים אֲשֶׁר הָיוּשׁוּב שֵׁל לְוַיִּי מַגִּים בְּהַמּוֹצָא. מַגִּים צַדֵּיק בֶּנֶּזֶף מָכְרִים יֵרֵדָה בֵּימֵי מַגִּים וַיִּצְאֵן. The letter mentions the rate of two marcellos (a silver coin minted in 1472) per quire. See M. Benayahu, ‘Book trade between Candia and Egypt’, in Yad le-Heiman: A.M. Habermann Memorial Volume, ed. Z. Malachi, Lod 1983, p. 264 (in Hebrew). The Oriental book lists from the Geniza also provide evidence that the cost of copied books was sometimes calculated by the quire (see, e.g. Allony, Jewish Library, no. 76). For the yearly wages of the scribe Perets, who was hired to copy all of the tractates of the Talmud (37 פרחים), see above n. 133, and Assaf (Mekorot, vol. 2, p. 110) has commented that this was equal to the teaching wages of Rabbi Yisra’el Isserlein! According to that source, the scribe was expected to put in 44 hours of work per week. MS Oxford MS. Heb. c.13, fol 14. (Neubauer & Cowley Catalogue 2807/14) was published by S. Assaf, ‘Le-toledot hayishuv hayehudi be-erets yisra’el’, in his book Texts and Studies in Jewish History, Jerusalem 1946, pp. 38-42. See also Gil, History of Palestine, vol. 1, p. 193. For the cost of copying per quire, see N. Allony, ‘Hasefer u-meleket hasefer be-erets yisra’el bi-yemei habeinayim’, Shalem, 4 (1984), pp. 15-16. MS Cambridge T-S Or. 1080 J200; See Goitein, Mediterranean Society, vol. 2, p. 238 (information on the daily wages of unskilled workers is provided by Goitein, ibid. vol. 1, p. 99). Indeed, Goitein wondered why in a society that consumed books, the scribal craft, which required both knowledge and skill, should be rewarded with such poor wages (ibid., vol. 2, p. 237). Although those who commissioned the books provided the writing material, there was a striking discrepancy between the cost of producing books and their commercial value, as reflected in Geniza documents. One document details the wages of the scribe Zakai ben Moshe, active during the middle of the 12th century (see N. Allony, ‘Four Book-Lists from the Twelfth Century’, Qiryat Sefer, 43 [1968], p. 125), for copying an Arabic translation of the Pentateuch on parchment: three dinars, half a dinar received as an advance, and after completion of a third of the copy the scribe reduced the price by half a dinar, see Goitein, ibid. According to a deed from 1021, cited by Goitein (ibid., p. 239) the scribe received 25 dinars for the copying of the Prophets and Hagiographa. Goitein notes that a similar price for the copying of a Hebrew Bible is mentioned in a letter to Naharai ben Nissim. For the prices of copying (and prices of books) according to Geniza documents, see also Allony, ‘Hasefer u-meleket hasefer’ (above, n. 169), pp. 15-18. A number of colophons allow us to learn about hired scribes’ complaints, their poverty and difficult work conditions (see below in chapter 13, in the section entitled ‘Personal production and its impact on the transmission: the scholarly copying as against the duplication of texts by hired scribes’).
scribe according to *Sefer Hasidim*, which recommends entrusting the copying of books to those unsuited even for studying *aggadah* (homiletic literature) and Bible.\(^{171}\)

In contrast to the meagre information about scribes’ fees, one should mention the abundant sources about the prices of medieval manuscripts. Two major European sources of evidence, most of which derive from Italy, are available to us. A wealth of information can be gleaned from deeds of sales and records of the sales of manuscripts, inscribed on the blank pages, generally at the end of a sold manuscript. Zunz, Steinschneider, and Berliner already presented data, culled from a selection of deeds of sale and notes of purchase,\(^{172}\) regarding the prices of books that were purchased from their owners, but these data have not yet been methodically collected and are still awaiting the systematic analysis of the comparative value of the indicated sums in their respective times and regions. Another rich source is the indications of manuscripts’ value in lists of books divided among heirs, in which the estimated value of each item was inscribed, so as to ensure their equitable distribution.\(^{173}\) More comprehensive data yet are contained in the commercial documents among the many book lists in the Geniza, which, as mentioned, frequently include the prices of books as well as the price of the copying.

**6. The indispensability of the comparative perspective for Hebrew codicology**

It is quite remarkable to witness the extent to which the practices of book production are imprinted by a shared tradition in all of the cultures in which codices served as receptacles for texts, and as media for their preservation and dissemination, regardless of acutely different languages and scripts. One may marvel at the force of the regularity and continuity revealed in the basic structures, the production techniques, the social and intellectual function, and the aesthetic principles embodied in the mid- and late medieval codices in all of these book civilisations. Whether they be codices inscribed in Latin, Greek, Arabic and Persian or Hebrew scripts, in widespread

\(^{171}\) Above, n. 124.


\(^{173}\) An illuminating example is found in the above mentioned list of books divided among 7 sons (n. 118); yet, appraisals are usually inscribed as <...> כרך, in an annotation apart at the beginning of the manuscripts. The appraisal of the value of books by a scholar is already mentioned in the German *Sefer Hasidim*, circa 1200: החכם היה עורך ושם ספרים ומספרים ועמדות נגזרות לא תפרועו Ответ на вопрос: "עכשא משא תשייך למשה פסיים (Wistinetzki and Freimann edition, passage 826)."
territories and in sundry regions, or inscribed in the Syriac, Coptic, Glagolitic, or Cyrillic scripts – all equally partake of the very same anatomy of the codex, common writing materials, similar proportions and formats, and the analogous molecular structure of quiring achieved by the folding and stitching together of a regular number of bifolia, as well as of the use of a variety of means of notation in the margins to ensure the correct order of the quires and bifolia. The great majority of these codices were prepared for copying by means of the architectural layout of the writing surface, proportionate to the entire surface of the page, and by using rulings to serve as scaffolding for the writing, in a variety of techniques, which were nonetheless mostly shared. All made use of additional para-scriptural and peri-textual means for improving the readability of the copied text and for making its structure transparent, and some included decorations, ornamentation and illuminations in the margins or in the body of the inscribed text. Although the embodiments of this common infrastructure underwent changes over time, as for example in the composition of the quires, the ruling techniques, and the layouts of the text’s disposition, this structure has also displayed, throughout its permutations, a stability and continuity lasting close to a millennium, allowing us to view it as some kind of universal grammar that permeated, in some elusive ways all the codex civilisations. Furthermore, its imprint can still be recognised even after the invention of the mechanical printing press, which, notwithstanding its revolutionary nature, still embodies patterns inherited from the deep structure of the manually produced codex. In truth, the codex formation has survived very much into our own times, despite the paradoxical resurrection of the form of the vertical scroll –the rotulus – on computer displays.

The existence of a common basic tradition of codex production warrants, therefore, that we integrate a comparative perspective and rely on it in our research and the codicological typology of each of the script cultures calling even for the establishment of a general comparative codicology. All the more crucial is the reliance on a comparative perspective in the study of Hebrew manuscripts and in establishing their historical typology. This need is an outcome of the wide dispersal

175 The indispensability of the comparative approach and the rewards of implementing it were first emphasised in my book Hebrew Codicology; this emphasis is reflected also in the subtitle of my book Hebrew Manuscripts of East and West: Towards a Comparative Codicology, see ibid., pp. 99-103. There I remarked that Hebrew manuscripts, by bridging between East and West and between Islam and Christianity, may serve as a productive medium for comparative research. Indeed, in recent years awareness of the importance of the comparative aspects of book craft has been spreading within
of Hebrew manuscript production in the zones of the codex civilisations in the Mediterranean perimeter and in adjacent regions to its north and east. No doubt, this dispersal and concomitant distribution of script types of the Hebrew codex render the comparisons between Hebrew book craft and design and those of the host societies of vital importance for the understanding of the unique typology of the Hebrew book in each of its different diasporas, and for the identification of its sources of inspiration and affinities. Indeed, despite the shared script and, in most copied and designed books the shared use of the Hebrew alphabet, and despite the strong religious cohesion and social solidarity, the affinity of Hebrew codices with one another are often inferior to those with non-Hebrew codices of the host societies. This said, the degree of affinity between Hebrew book craft and script styles to those of the non-Hebrew codices was not the same in all regions or civilisations, and it can attest to the nature of the relationship with the dominant alien society. It thus clearly appears that the practices of Hebrew bookmaking in the Near East were greatly influenced by the book culture of the Muslim host society, and that the manuscripts produced in Muslim Spain (and after the Christian reconquista also in Christain Spain) and in North Africa were greatly influenced by Arabic calligraphy but less so by Arabic bookmaking; Hebrew manuscripts produced in France and Germany, on the other hand, were marked in their codicological features, design and scripts by Latin manuscripts produced in their respective environments more than manuscripts produced in Italy until the fifteenth century.176 Employing a comparative perspective in these regards may enable us not only to deepen our understanding of transformations in the practices of bookmaking in the various zones, but can also help elucidate an issue much debated by historians who diverge in their assessments as to the degree to of acculturation, containment and integration of the environment’s ways and customs by the Jewish society, or the degree of withdrawal and seclusion of these persecuted and rejected minorities, which were yet contained within gentile societies.177 This comparative narrative can also guide us in reaching conclusions

European codicology as well. This is evident in the collection published in 1998, Hoffmann (ed.), Codicologie comparée, which brought together articles presenting data on the material traits of Latin, Greek, Arabic, Persian, Hebrew, Syriac, and Armenian manuscripts.


177 Specifically in regard to the production of Hebrew manuscripts in Italy during the Renaissance, especially in Florence, Nurit Pasternak well demonstrated the possibility of extracting from the study of
regarding the extent to which the majority culture seeped into the minority culture in its domains.

Consequently, the historical typology presented in this book will include comparisons between the many codicological features and characterisations displayed by the Hebrew manuscripts and those found in Latin, Greek, and Arabic scripts, and sometimes also in other scripts, such as the Syriac or Coptic, on the basis of published research.

Pasternak emphasised the dialectical dynamics involved in the very production of Hebrew manuscripts within a Gentile society, and which does not take place in a secluded environment that is not obliged to deal with contrasts. This dynamics, she argues, can be perceived as fertilising, or can be interpreted as the assimilation of foreign practices. Alongside characterisations such as ‘symbiosis’ or ‘osmosis’, used to assess the relations of the Jewish minority society to Christian society, she proposes adopting the term ‘adsorption’ – a chemical term describing a state in which the adsorbing body does not change its essence or nature. See also M. Beit-Arié, ‘External and Internal Frontiers in Hebrew Manuscript Production’, in Proceedings of the Third European Congress of Medieval Studies (Jyväskylä, 10–14 June 2003), ed. O. Merisalo, Louvain-La-Neuve 2006, pp. 399–407.
Chapter 2: Colophon Components and Scribal Formulae

As against the scarce documentary and literary sources on book production and consumption, abundant data can be found within the manuscripts themselves. Besides various aspects of book craft, the culture of writing and the design traditions they embody, these authentic documents convey information provided by the copyist on the circumstances of production. These important data can be found in the colophons,¹ the only part of the work composed by the copyist, with the exception of manuscripts which were copied by their own authors. The colophons serve, therefore, as chief sources for our knowledge about the realities of book production and consumption and the social circumstances surrounding these processes, just as colophoned and

¹ See M. Riegler, Colophons of Medieval Hebrew manuscripts as historical sources, [Jerusalem] 1995 (Dissertation, the Hebrew University [in Hebrew]). It should be mentioned in this context how rare it is to find in the illuminated Hebrew manuscripts illustrations of scribes engaged in copying, the kind of illustrations that furnish a unique and invaluable source for understanding the scribal tools and modes of copying Latin manuscripts, by way of contrast, are richly present such illustrations (although most of them depict the writers of the four gospels, they nevertheless reflect contemporary writing practices). For a handsome collection of articles devoted to such illustrations in Latin manuscripts, see below chapter 11, n. 3. On the few representations of scribes in Hebrew manuscripts – most created by Christian artists – see T. Metzger, ‘La représentation du copiste dans les manuscrits hébreux médiévaux’, Journal des savants, janvier–mars (1976), pp. 5–32.
dated manuscripts serve as a basis for revealing the codicological typologies and its transformations.²

The term ‘colophon’ is a loanword from the Greek κολοφώη, meaning climax, summit, and its sense in the context of book craft is an inscription written at the end of a copy, or at the end of one of the book’s works,³ in which the copyist provides information about the production of the copy. Many of the Hebrew manuscripts are uncolophoned. Because the colophon is usually inscribed at the end of the manuscript and the first and last folios of a manuscript are generally more vulnerable to damage over time, it is likely that many colophons have been lost in this manner. Yet, it is clear that many manuscripts have survived in their entirety, or the page on which the colophon would have been written has survived, but they nevertheless do not contain a colophon. It stands to reason, therefore, that complete uncolophoned manuscripts were written by scholars and literati for their personal use, and that they saw no need to inscribe a colophon at the end.⁴ At the same time, it should be emphasised that a considerable proportion of extant colophoned manuscripts were self-produced. The

² Ezio Ornato attempted to investigate whether some correlation might be found between the proportion of colophoned Latin manuscripts and their time period or writing material, etc., and even suggested a number of hypotheses in this regard. See E. Ornato, ‘Libri e colofoni: Qualche considerazione’, Gazette du livre médiéval, 42 (2003), pp. 24–35. The notion has also been advanced that colophoned manuscripts reflect a particular type of high-end production, and that therefore they cannot be used to characterize manuscripts en masse. See the review of A.J. Piper, ‘Catalogue of Dated & Datable Manuscripts c. 700–1600 in the Department of Manuscripts in the British Library by Andrew G. Watson, The British Library, 1979’, Medium Aevum, 50 (1981), p. 105. This view may be somewhat justified in regard to Latin manuscripts, but certainly is not valid in the context of the reality of individual production of Hebrew books. In respect to the writing of colophons there is no difference between hired scribes and scribes copying for self-use.

³ In some manuscripts, the copyists took care to inscribe a colophon at the end of each part of the copying or of each disparate work. See e.g. MS Paris Hébreu 10 (Manuscrits médiévaux I, 108), which was written in Tlemçen in 1455 (the last work was written in 1456), and contains eight colophons.

⁴ It should be mentioned here that the Ashkenazic Pietist circles apparently avoided writing colophons, as Sefer Ḥasidim implies. Such avoidance would have been in conformance with this work’s condemnation of other scribal practices in Germany, which were antithetical to the virtue of personal humility preached by this movement at the turn of the twelfth and thirteenth century: ‘And when a person completes the twenty-four books <i.e. the Bible>, and one or two pages remain in the quire, he should not note on those pages that I have completed <the work> on such and such a date, nor anything else that is not strictly necessary. And should he wish to write, let him take a leaf and paste it to the board <of the binding> or attach it to the board, but the quire should not be written on’ (Sefer Ḥasidim, passage 600 = Sefer Ḥasidim MS Parma, p. 135). And cf. passage 607, which is identical to passage 1750: ‘A certain scribe had completed copying for an old man, and that scribe wished to write, I, anonymous, wrote this book for anonymous. The person who had commissioned him said to him: I do not wish for you to write my name on the book you copied for me. He responded: Why? <The old man> said: Because a few people wrote <their names> thus and it did not come to pass either for them or their children, because they were sold.’ The anecdote presented here refers to indications of ownership and the traditional blessing formula accompanying them, and not to the actual act of writing a colophon. See Beit-Arié, ‘Ideals Versus Reality’, pp. 561-562.
4,000 extant colophons⁵ of medieval codices written in Hebrew scripts constitute a significant percentage – about seven percent – of the estimated 60,000 complete or partial codicological units, in other words, of the total estimated number of all the extant codicological units, excluding the fragmented remains that survived in the Oriental genizas or those used secondarily as bindings in European libraries and archives. It appears that the number of explicitly dated colophons that survived in Hebrew script (around 3,700) is, relatively speaking, larger than the number surviving in Latin script.⁶ In addition, the Hebrew copyists supply more information in the colophon about the creation of the book, the men (or sometimes women) involved in its production and consumption, and they tend to elaborate these matters at length. The wealth of information stored in the colophons may perhaps compensate somewhat for the limits of Hebrew codicology due to the lack of early codices in regions outside the Middle East, and their diminished numbers before the thirteenth century.

A typical colophon of the expanded format might include the following main components:

a. The scribe’s name
b. The name of the person who commissioned the copying or an indication that the copyist copied for himself
c. The title of the copied text or texts
d. The date in which the copying was completed
e. The locality of the copying
f. Eulogies, blessings, and wishes for person who commissioned the copying

Sometimes scribes and copyists would include valuable information on the circumstances and background of the copying, on the forlage, on their critical approach and practice, the duration of copying, remuneration, and other personal and historical data. Not all colophons contain all these components and their order may vary. Some of them are very brief, including only one component, such as a date or the name of the scribe, and some colophons are very long.

The earliest Hebrew copyist’s colophon (as opposed to an author’s or editor’s colophon), which though undated has nevertheless been identified as deriving from as

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⁵ For this number of extant colophons, see above chapter 1, n. 137.
⁶ As mentioned, the Syriac manuscripts display the greatest wealth of dated colophons, and the Syrian colophons are also apparently detailed (see above, chapter 1, n. 51).
early as the fourth century, appears on a magical papyrus written in late Western Aramaic which was unearthed in Oxyrhynchus, Egypt. It contains the scribe’s name, and an ending formula.

A colophon whose author included all of the main components appears at the end of a manuscript containing the entire Bible, which was written in Burgos, Spain in 1207 for the father of Rabbi Yosef ben Todros ben Meir HaLevi <Abulafia>:

An example of a laconic colophon including only a date can be seen in a fragment of a manuscript of piyyutim (liturgical poems), written in the Middle East in 1079:

Unlike the above mentioned Spanish manuscript, which includes all the components of the colophon, in a roughly coeval biblical manuscript written nearby, the copyist only briefly indicated the location (Toledo) and the date of completion (1197), without any embellishments of formulae or wishes, and indicating neither his own name nor the copy’s destination. Was he copying for himself or was he hired by an unmentioned owner? The colophon reads: ושלם ב_pythonawaiיתו דבריו זכריו בשלום.

An example of a laconic colophon including only a date can be seen in a fragment of a manuscript of piyyutim (liturgical poems), written in the Middle East in 1079:

נשלם בירח טבת שנת דתתקנ"ח במתא טליטלה.

This text was published without a bibliographical reference by L. Ginsberg, Yerushalmi Fragments from the Genizah, New York 1909, p. 185 (in Hebrew) and based on this was cited by J.N. Epstein Mavo’ le-nusah haMishna 2, Jerusalem-Tel Aviv 1964, p. 935; see also. Y. Sussman, ‘Additional notes to “A Halakhic Inscription from the Beth-Shean Valley’’ Tarbiz 44 (1974-75), p. 194 (in Hebrew).

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7 MS London Or. 9180C (See Sirat, Papyrus, pp. 115-116 and the literature cited there, as well as plate 55 [=Birnbaum, Hebrew Scripts, no. 152, the same plate appearing more clearly]). At the end of Tractate Ta’anit in the Fustat Geniza palimpsest of a Palestinian Talmud written over Greek, MS Cambridge T–S 12.187 (facsimile edition: C. Taylor, Hebrew-Greek Cairo Genizah Palimpsests from the Taylor-Schechter Collection, Cambridge 1900, pl. IV) – remnants of a codex copied certainly before the 9th century – a concluding formula for the tractate was written with smaller letters, justified to the centre, the beginning of which accords it the character of a colophon: והשלמה נשלם בירח טבת בן ברוך שנה מגן בשלום.

9 MS Paris Hébreu 82 (See Manuscrits médiévaux I, 1)

9 MS Paris 105 Hébreu 105 (See Codices hebraicos, Part IV, ms. 95)
A magnificent example of a long and informative colophon is one composed by the female scribe Paula bat Avraham the Scribe at the end of a copying of a monumental two-volume halachic manuscript, in 1293, most likely in Rome:

In the year of the Seleucid era (1079).10

10 MS Oxford MS. Heb. d.66, fol. 120 (See Codices hebraicis, Part II, ms. 39). On the “Era of the Contracts”, which coincides with the Seleucid calendar, see below, section 3.

MS Oxford MSS. Can. Or. 88–89 (Neubauer Catalogue, 634–635). Paula copied Pisqei HaRID (legal rulings of Rabbi Isaiah di Trani) on several Talmudic tractates following the request of a relative of her. This remarkably skilled scribe copied another three manuscripts in calligraphic script: five years earlier in 1288, in Rome, she copied for her own use a two-volume manuscript of commentaries to the Prophets, which prior to World War II had been kept in Breslau, Jewish Theological Seminary 104 (Loewinger & Weinryb Catalogue 27–28). The manuscripts like all the collection of the Seminary were had been confiscated by the Nazis and disappeared until much later were re-discovered in Trutnov (Czecho-slovakia) and transferred to the National Library in Prague, and eventually back to Wroclaw (Breslau), where they were handed over to the Jewish community, who deposited them (together with a few other manuscripts that came from the same collection) in the university library. In the Breslau-Prague-Wroclaw manuscript, Paula added her husband’s name to her own: Yeḥi’el ben Shelomo, and as in the other colophons, her ancestry – ‘scion of the holy Rabbi Jehiel the father of Rabbi Natan author of He’Arukh’ (in the language of the colophon under discussion). It follows that she was descended from one of the brothers of the famous author of the first dictionary of the Talmud. The traces of another manuscript, a prayer-book written in 1306, have been lost, but we know of its existence in the library of the Jewish community of Verona as well as the text of its colophon from a book review written by AvrahamAvraham Berliner: <A.> Berliner in Magazin für die Wissenschaft des Judentums, 11 (1884), p. 142. The manuscript was written for her son Shelomo ben Shelomo of blesed memory son of Moshe ben Jekuthiel, undoubtedly the son of her second husband and named after him, probably because he passed away before the child was born. A fourth manuscript from Paula’s hand, MS Moscow, RSL, Guenzburg Collection 618, does not contain a colophon, but should surely be identified with Paula as copyist. This is attested both by the characteristic script, and by the codicological traits related to the production of the codex. Indeed, the letters of Paula’s name are highlighted as in an acrostic in a number of the pages of this manuscript (on this scribal trick, see below at the beginning of the appendix to section 1 of this chapter). MS Moscow contains the text of Pisqei haRID on several Talmudic tractates, and it is therefore an additional part of the copying of Pisqei HaRID, which were copied in the two monumental Oxford volumes.

11 For the reading of this acronym, see below n. 64.

12 For the reading of this acronym, see below n. 63.
Colophoned manuscripts are supremely important for the codicological typology, for they constitute a representative skeletal frame, and nearly always provide an anchoring in time, and in half of the cases also in space, providing a basis for the characterisation of the types of book craft and for the identification of the many uncolophoned manuscripts. Moreover, as noted, the colophons themselves are reliable historical documents which serve as chief primary sources for our knowledge of the realities of production, distribution, and consumption of Hebrew books, the modes of textual transmission, and the identity and social status of the copyists and of those who commissioned the copies. The indicators of locality are of great historical value, for despite the accidental nature of the survival of the colophons, their numbers provide an indication of the size of a Jewish community of a certain places, and especially of its intellectual character. It goes without saying that the dozens of colophons indicating a locality which is not attested as the site of an existing Jewish community in any other historical sources from the period in which the copy was made constitute historical documents of great importance.

1. Names of manuscript producers and division of labour between them
The name of the scribe is specified in an overwhelming majority (almost 80%) of the dated manuscripts that were documented. This percentage excludes colophons in manuscripts whose copyists have been identified or whose names are alluded to but not explicitly recorded; however, it includes the few colophons written not by copyists but by other collaborators in the production (usually vocalisers or Masoretes [in biblical manuscripts]). A similar ratio of explicit scribal names can be found among the colophons of all the manuscripts, whether dated or undated, whether documented or not. Because a considerable proportion of manuscripts were copied for personal use, it is no wonder that the proportion of colophons in which the names of the destined owners are mentioned is no greater than 37% of the colophons in dated and documented manuscripts, and even of the colophons in all documented manuscripts. Sometimes names of others involved in the production are mentioned in the colophons of biblical texts; these include the Masorete ( stratégie) – who copied the Masora magna in the upper and lower margins of the text and the Masora parva in the spaces between the columns of the biblical text – and the vocaliser (טטוג), who added the vowels and cantillation marks to the text, and who, in the case of biblical manuscripts, was apparently always also the masorete. In a few biblical copies the
scribe noted himself that he had both vocalised and annotated the Masora of the text, from which we may conclude that the scribe in question was a professional who specialised in the production of biblical codices. A scribe of Maghrebi origin, for example, wrote at the end of a manuscript of the Prophets which he completed in 988/9 in Jerusalem: 1.4 Yosef ben Ya’aqov the Maghrebi wrote, vocalised, and copied the Masora’ (אני יוסף בן יעקב המערבי כתבתי ונקדתי וחספתי). 1.4 Shemu’el ben Ya’aqov, the scribe of the famous manuscript known as ‘MS Leningrad’, which was written in 1008 in Cairo, and which is the earliest dated copy that preserves all of the books of the Hebrew Bible in their entirety, copied, vocalised, and copied the Masora annotations not only for this codex (as he detailed in one of the many colophons of this manuscript, fol. 474r: אני שמואל בן יעקב כתבתי ונקדתי ומס’רתי זה המצחף לכבוד רבナא מברך בן יוסף הידוע בן אזדאד but also three other biblical manuscripts. 1.5 The lack of a division of labour in the copying of a biblical text – whereby the copyist also undertakes the copying of everthings accompanying it – and the specialisation in the copying of all layers of the biblical text is a salient feature of early biblical manuscripts produced in the Middle East, but it is also recognisable in Ashkenaz. 1.6 An example of a colophon by a scribe-Masorete-vocaliser in the Ashkenazic zone is MS Berlin Ms. Or. 4º 9, produced by Elijah ben Berechiah haNakdan in (Rouen 17, France, in 1233: אני הסופר והנקדן אליהו בן <…> לברעמ טורום רון) תרימ, I, the scribe and vocaliser Elijah ben <…> Berechiah <…> wrote, vocalised, and copied the Masora). This phenomenon

14 MS St. Petersburg Exp II B 39 (See Codices hebraicis, Part I, ms. 12) 15 MS St. Petersburg Exp I B 19a (See Codices hebraicis, Part I, ms. 17), and ibid. the brief descriptions of the three other manuscripts in whose colophons Shemu’el also wrote ‘I wrote, vocalised, and copied the Masora’.

16 In half of the sixteen dated manuscripts that survived until 1028, the copyst both vocalised and copied the Masora.

17 On this identification of deprivation see N. Golb, Les Juifs de Rouen au Moyen Age: portrait d’une culture oubliée, Rouen 1985, pp. 39-52. See also Toledot hayehudim ba-‘ir Rouen biyemei habainayim, Tel Aviv 1976, pp. 23,31 [in Hebrew].
decreases toward the end of the thirteenth century and one can discern a tendency to separate the production roles. In Spain and Italy, too, the copyists sometimes fulfilled the roles of vocaliser and Masorete.

Vocalisers, masoretes, illustrators, editors, and binders

In many biblical manuscripts, production was divided between the copyist and a scribe who added the accompanying layers to the text, which required expertise beyond calligraphic skill. In not a few cases, the Masorete-vocaliser added a colophon of his own to that of the copyist, as in one of the earliest manuscripts copied by the scribe of the famous Aleppo Codex (whose colophon did not survive), MS St. Petersburg II B 17, a Pentateuch completed in 929 and ending with a colophon by the copyist Shelomo ben Buya’a HaLevi; two pages later the copyist’s brother added the colophon (containing only a date): יא אפרים בן רבי בויאעא נקדתי עולם ואכלתי את התורה הזאת ובדקתי אותה.

Another example of double colophons can be seen in MS Oxford. MS. Can. Or. 91, which was written in Germany. At the end of the manuscript (fol. 307r) the scribe wrote the text of the colophon in a square script, and noted that he completed his copy on the 4th of Ab, 1304: יא יוהיז בר מנחם הסופר סיימתי זה התרגום וחמש מגילות והפטרות לר גרשום.

The original name was erased and another name רגרסה was inserted instead of it — the name indicating the Masorete-vocalizer (מרשמ). The scribe may have made an error and then corrected it, or the manuscript may have been originally destined for another son of Eliezer, but in the process of vocalising and annotating it, its destination was changed.

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18 See Codices hebraicis, Part I, ms. 5. According to the wording of the Masorete-vocaliser, he was also the one who proofread the text of the Tora. Furthermore, it stands to reason that by using the term כללתי he meant to indicate that he had also decorated and beautified the manuscript (see ibid. p. 53). Indeed, the Masora and related matters are inscribed at the ends of lines as decorations (micrography), and the tallies of the numbers of verses are accompanied by miniature ornamentations. For the decoration of manuscripts by vocalisers-Masoretes, see below, n. 23, and in the passage the note refers to.
19 The original name was erased and another name מרשפ was inserted instead of it — the name indicating the Masorete-vocalizer (מרשפ). The scribe may have made an error and then corrected it, or the manuscript may have been originally destined for another son of Eliezer, but in the process of vocalising and annotating it, its destination was changed.
The vocaliser-masorete, who copied the Masora in tiny letters in the form of geometrical ornamentation in the manuscripts’ openings, took about a year to complete his labours. At the end of the Masora, beneath the scribal colophon which he decorated, the vocaliser-masorete added his own colophon, the beginning of which is in rhymed verses:

ברוך העוזר אשר עזרנו עד הנה, ויעזרני לתקן לי לעצמי כהנה וכהנה
וחמלת חותמני על כתובותיו, ויעזרני לתקן לי לעצמי כהנה וכהנה
איני אלא עוצר בפיי, לעשה הנכוד הקדום והsterreichי, והมหา ותם ומפלת והאספטרה,
ושם במקומם, והมหา יتسجيلו לעצמי, ושם יسجلו לעצמי,
מי הגין אלי, שנטל מאפרות עולם ואפרות לבריה, ורשע ושם, ולבריה, ולבריה,
נושא ומעיל, ומעיל, ומעיל, ומעיל, ומעיל, ומעיל, ומעיל, ומעיל, ומעיל, ומעיל,

In a few manuscripts we find the colophon of the Masorete-vocaliser, and in biblical manuscripts that lack the Massoretic notation, only that of the vocaliser; it is unknown whether the Masora or vocalisation were added directly upon completion of the copy or after a long time lapse, although presumably biblical copies were of little use without the vocalisation, and therefore the vocalisation and Masora must have been added soon after the copying. Meir ben Ya’aqov haSofer completed the copying of MS Berlin Ms. Ham. 80 (2) for Avraham ben Nathan in 5050 (1289/90), apparently in Germany (the colophon appears on fol. 255v). On the page preceding the colophon the vocaliser-Masorete Hayyi’m ben Shne’ur wrote that he completed the vocalisation and the Massoretic annotations of the entire Bible in 5052 (1291/2), more than a year after the copying was completed. MS Berlin Ms. Ham 80 includes two volumes. Hayyi’m ben Shne’ur noted that he vocalised and annotated an entire Bible (עשרית הארץ), but it cannot be deduced from this statement that he vocalised and annotated the first volume MS Berlin Ms. Ham. 80 (1), because the Masorete for this volume disclosed his name as מ"א ח"ב (Ya’aqov), and the separate volumes do not combine to form a complete Bible. If indeed the second volume contained a full Bible, it is no wonder that the vocalisation and Massoretic annotation took over a year.

Besides biblical books, in which the vocalisation and cantillation comprise an inseparable part of the text, prayers books, maḥzorim, and siddurim were also vocalised. The vocalisation of liturgical texts certainly had practical usefulness, for it was meant to facilitate the pronunciation and the comprehension of the prayers and in

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20 On the unjustified pairing of two biblical volumes in MS Berlin Ms. Ham. 80, and their contents, see below, n. 104.
particular of the piyyutim, whose language was often quite intricate. As with the biblical codices, the copyist of a mahzor also vocalised it, but sometimes the vocalisation was added by a separate vocaliser who also wrote his own colophon (in Ashkenaz and in Italy). 21

Another craftsman who collaborated with the copyist or vocaliser-Masorete was the illuminator who decorated the manuscripts with calligraphic flourishes, illustration, and text ornaments. Only a few illuminators wrote colophons or are known to us by name. No doubt, most of the illuminators who illustrated finely lavish Hebrew manuscripts in France, Germany, and Italy were Christian artists who illuminated the manuscripts or coloured or gilded the initial words at Christian ateliers, under the guidance of the copyist or manuscript owner. 22 At the same time, it can be said with near certainty that decorated (and even illuminated) manuscripts, especially those with pen decoration, were executed by their scribes. Many Masoretes, both in the Orient in the tenth- and early eleventh century, and later in Spain and Ashkenaz, decorated their copies of biblical codices by shaping the Massoretic annotations (written in minute script) as geometrical- or mixed floral and geometrical patterns, as figures of mythological or even realistic animals, and even in the form of text illustrations (in Ashkenaz), known as micrography. In the thirteenth and fourteenth century in France and in Germany, some Masoretes would write a colophon, or of their name or the name of the person who commissioned the copy in the upper and/or lower margins, using hollow characters whose outlines were formed from the text the Masora magna. Sometimes they even decorated and coloured the notations of the sedarim, parashot, and the tallies of the verses, created pages of interwoven verses in carpet-patterns, and even drew illustrations of the holy vessels of the sanctuary and temple (which apparently explains the meaning of the formula by the vocaliser-Masorete Ephraim ben Buya’a, who also decorated the Pentateuch copied in 929 by his brother, the abovementioned scribe of the Aleppo

21 E.g. in MS Rovigo, Accademia Silvestriana 216, which was produced in Germany in 1272, two colophons were written on fol. 324v: the first by the copyists (who accidently omitted from the date the numeral indicating decades) and the other by the vocaliser, who began to vocalise the mahzor some two weeks after he finished copying it.;

22 See Beit-Arié, East and West, pp. 20-23.
A delightful example of a Masorete who apparently was also the decorator and illuminator can be seen in MS Hamburg, Cod. Levy 19, which contains a Tora with Onkelos’ translation, haftarot, the five scrolls, and the book of Job, with Rashi’s commentary in a semi-cursive script. The scribe, Isaac ben Elijah Ḥazzan of Oxford (אוכשונפ'ורט), who presumably was expelled from England during the general expulsion of 1290, completed the copying of this biblical reading corpus, which he splendidly illustrated and decorated, in Brussels in 1309.

At the end of the manuscript he wrote a colophon (fol. 625r, which contains most of the colophon) decorated with an unusual illustration of a dignitary (presumably חיים בן הק' חיים, for whom the manuscript was produced), sitting with a dog in his lap and a monkey at his side. Underneath the colophon is a second flowery colophon in a miniature hand which is integrated into the ornamental border surrounding each page. Judging by the script’s similarity to the script of the Masora, it was the masorete who wrote the addendum to

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23 On the word וכֽללתי in the sense of ‘I decorated, beautified’, see above, n. 18. On the writing of the Masora (and other texts) in the form of decorations and illustrations, and on the art of micrography in Hebrew manuscripts, see the study by Lila Avrin. C. Sirat, La lettre hébraïque et sa signification; L. Avrin, Micrography as Art, Paris–Jerusalem 1981, pp. 43–89, Pls. 1–118. See also the summary on this Jewish Art by Dalia–Ruth Halperin, Illuminating in Micrography: The Catalan Micrography Mahzor, MS Heb 8°6527 in the National Library of Israel, Leiden 2013, pp. 5–21
24 See S. Birnbaum, 'Hebrew Manuscripts of Norman England’, Notes and Queries, 146 (1934), pp. 236–239. Most of this article is devoted to philological proofs of this identification (supported, according to the author, also by identification of the script), and to the refutation of the identification with Ochsenfurt near Würzburg. Cf. Beit–Arié, Makings, p. 130.
25 The title prefacing the father of the owner, "הקדש" ('the holy’) indicates that he was martyred. His son who was named after him was therefore born after his death.
the colophon in which he noted that he had illustrated the manuscript: אני יוסף בן חיים זה הספר ציירתי והשלמתי.

MS Oxford MS. Kennicott 1, a Bible beginning and ending with quires containing Sefer HaMikhlol, by David Kimhi, and written in La Coruña, Galicia, northern Spain) in 1476 by Moshe ben Ya’aqov Ibn Zabara HaSofer for Isaac ben Shelomo de Braga, was richly decorated by Yosef ibn Ḥayyim who at the end of the manuscript (fol. 447r) wrote his own colophon in large letters, noting that he had illustrated the book: אני יוסף בן חיים זה ציירתי והשלמתי הספר. In the writing of the colophon, too, the illuminator went to great lengths to display his complex artistry and creativity and his humorous and playful construction of anthropomorphic and zoomorphic letters.

26 The phrase והכתיב ('and the writing'), seems to indicate the copying of the Masora. The name of the masorete-vocalizer was probably Yehuda ben Avraham Cohen, as indicated by the decoration of these letters in the text of the Masora (for this trick practiced by scribes and masoretes, see below, in the appendix to this section). For more details on the colophon, see below chapter 11, n. 135.


28 In the text of the colophon and the stylizing of the letters, the illuminator Yosef ibn Hayyim had actually copied the style of the illuminator Yosef HaZarefati. The latter wrote an identical colophon with similarly styled letters at the end of a Bible kept in Lisbon, Bib. Nacional, Illuminado 72, which was written in 1299/1300 in Cervera, Spain, and was annotated in Tudela by the Masorete Joshua Ibn Gaon, a master of micrography (for a summary about the manuscripts he annotated with micrography, a few of which he may have illustrated, and about their colophons, K. Kogman-Appel, Jewish Book Art Between Islam and Christianity: The Decoration of Hebrew Bibles in Medieval Spain, Leiden 2004, pp. 98–130. In the Lisbon manuscript, Ibn Gaon incorporated into the micrographic Masora twenty mentions of his name, or standard colophons, with dates, indications of locality, or the name of the owner (effaced in the scribal colophon). See T. Metzger, ‘Josué ben Avraham Ibn Gaon et la “masora” du Ms. Illuminado 72 de la Biblioteca Nacional de Lisabonne’, Codices Manuscriti, 15/5 (1990), pp. 1–27. Joshua Ibn Ga’on did not only copy the Masora, draw micrographic illuminations, and illustrate, but apparently also copied MS Paris Hébreu 20, see recently, J. Del Barco, Bibliothèque nationale de France – Hébreu 1 à 32 (Manuscrits en caractères hébreux conservés dans les bibliothèques publiques de France: Catalogues 4), Turnhout 2011, under the entry for this manuscript. On the other hand, MS Hébreu 21, a Bible with a Masora copied by Joshua (according to the colophon incorporated into the decorated Masora), the copying of whose body text is also attributed to Joshua, was not in fact copied by him, as demonstrated by the comparison of the script and parascriptural traits (See Manuscrits médiéaux I, 25). For eight explicit colophons by illuminators, some of whom were also Masoretes, and on scribes who seemed to have illuminated their copyings, see: Y.
An example of a manuscript, which according to its colophon was produced by a professional scribe whose expertise encompassed all three scribal function which came together in the production of a high-quality manuscript is the Haggada kept at the Jewish Theological Seminary in New York, MS New-York MS 8279. This Haggada was copied, vocalised, and illustrated by the famous scribe and illuminator Joel ben Simeon of Rhineland in 1454:

אני הלבלר יואל ב"ר שמעון ז"ל, המכונה וייבש
אשכנזי מעיר קלונייא על הנהר רינוס, כתבתי נקדתי וציירתי ההגדה זה<!> וסיימתי אתו<!> בירה אילול שנות רי"ד פברס (fol. 9r).

The proofing of the copy was an additional stage of manuscript production, but it is reflected only in a small number of colophons. In biblical manuscripts containing both vocalisation and Massoretic annotations, the meticulous copying of which was an obvious requirement, the proofing of the copy is noted already in a number of Oriental colophons of the tenth century – the era in which the widespread distribution of biblical codices was undertaken. These manuscripts were proofed either by Masorete-vocalisers or by scribes who also vocalised and added the Masora, and this practice is evidenced also in late copies of the Bible from Yemen. One case of a unique long colophon has survived, written in 960 by the proofreader of a copy of the Hagiographa written in the Middle East. In a number of biblical manuscripts produced in other areas, the scribe mentions proofing his own copying, e.g., Elisha ben Shemu’el, who wrote a Pentateuch in Toledo in 1256, and proofed it according to the proofed books kept in Toledo, under the supervision of the town’s scribes. Most of such manuscripts were produced in Spain, and a small number were produced in Byzantium.

30 See *Codices hebraici*, Part I, mss. 5, 6, 8, 10, 17.
31 MS St. Petersburg Eap II B 281 (See *Codices hebraici*, Part I, ms. 10); of the manuscript of the Hagiographa only one page remains, containing a long colophon by the proofreader.
32 MS Parma Parm. 2025 (See the colophon in the Richter & Beit-Arié Catalogue [Parma], 38).
33 MS Paris Hébreu, 17-18 displays an example of the proofing of an Ashkenazic Bible and its Aramaic translations written circa 1300, which was performed just after it was purchased in 1512 in Governolo, near Mantua. At the end of each volume the proofreader Menahem ben Perez Trabot wrote a colophon. The colophon of the second volume (p. 370) notes that he proofed with maximum accuracy, according to the accurate models in his possession (בדיוק היותר עם ספירים מדוייקים ויאמר במיעת הוא) in the home of the owner Yosef, Moshe, and Shemu’el, sons of Yitshaq Gallico.
Remarkable for their mention of the proofing of non-biblical texts are a group of more than twenty manuscripts, all Oriental apart from two written in Muslim Spain, nearly all written in Judaeo-Arabic. In these manuscripts, most of which are dated, the fact that the copy was checked against the forlage, which may have been a proofed and authorized model-text, was noted in Judaeo-Arabic (and sometimes in Arabic, in Arabic script) by means of a brief formula known from similar notations in Arabic manuscripts. Sometimes these notations are written separately, and sometimes they are written in standard format of a colophon. Either way, these notations demonstrate that the proofreader was not the same individual as the copyist. Sometimes, however, the notations are incorporated into the copyists’ colophon or added in his own hand, indicating that the copyist himself proofed his copying upon completing it. The first instance of such an Arabic proofing notation appears, surprisingly, in a biblical manuscript – the oldest extant manuscript of an entire Bible (“MS Leningrad”), from 1008. In a number of places, the proofreader noted קובל פצח. The full proofing formula was noted in Arabic script by the proofreader of a manuscript containing two of the works of Shemu‘el ben Ḥophni Gaon, which was copied in 1035: קובל פצח, i.e. the copy was compared and it is correct. Such a notation in Arabic script was also marked on the earliest extant dated manuscript from the Iberian peninsula – a manuscript of a grammatical work in Judaeo-Arabic, which was produced in 1119 in Valencia in Spain, while still under Muslim rule. Similar wording was used to note the proofing of a copy by the copyist himself, in a proofing colophon which was added to a copying colophon: צחה מברך בירבי משה. Similar phrases, such as קובל וצח were used in other manuscripts by other copyists (proofreaders). Another
formula for describing the comparison of the copy to the model – בלגת אלמקאבלה – appears in the proofing notations of several manuscripts, for the first time in the Orient in a Judaeo-Arabic manuscript from 1119/20, and lastly in Granada at the end of a colophon of a Judaeo-Arabic manuscript from 1399. An example of a similar use of a proofing colophon appears in a Judaeo-Arabic fragment of the commentary of the Karaite Japheth ben Ali on the Book of Jeremiah from 1183:

בונה אללאל ויוס אלמלאלו אלמלאלו ובויר אלר אלס אלף ארבעה ומשהו ומשהו ומשהו...

An example of a similar use of a proofing colophon appears in a Judaeo-Arabic manuscript from 1183:

וכמל מקאבלה אלגוזו בעון אללה יום אלתלתה אלתאלת ועשרין מן שהר אלול שנת אלף וארבע מאות ותשעים לשטרות

Apart from evidence of proofreading found in biblical manuscripts and in the Judaeo-Arabic manuscripts mentioned above, there are few proofreading notations that are not rhetorical in nature, and most of them are also late. Nearly all were written by the scribe himself as part of the colophon. In some colophons, from Spain and Provence in particular, the copyist or original noted that they had proofed their copying according to several copies; thus, in a manuscript of the commentary on the Tora by Avraham Ibn Ezra, produced in Provence, apparently in 1445, we read that the proofreader used two model copies: והגהתי אותו משנים פירושים מדויקים ומוגהים על הנכון. Similarly, a vocaliser in Avignon who in 1453 vocalised and proofread a mahzor according to the liturgical custom of Avignon wrote in the colophon:نسחי והגהתי זה הסדר <...> כpery שמה סמואלי מברדרים. Proofreading notations have survived, therefore, especially in the zone of the Muslim countries of the Middle East and in Muslim Spain and its Christian offshoots, but only rarely in Italy with its multitude of manuscripts, and appear not to have been used in Ashkenaz (Germany and France). A single example, ostensibly, of a proofing notation

Maimonides’ original manuscript. For a review of the many direct and indirect evidences about parts of Maimonides’ Mishne Tora that were proofed according to Maimonides’ own manuscripts or were autographed by him, aside from the famous authorization הוגה מספרי אני משה ברבי מימון (proofed according to my own books, Moshe son of R. Maimon) in MS Oxford. MS. Hunt. 80, see S.Z. Havlin, ed., The Authorized Version of the Code of Maimonides: the Book of Knowledge and the Book of Love, Facsimile edition of MS Oxford, Huntington 80 and addenda, Jerusalem-Cleveland 1997 (in Hebrew), pp. 23-26. The full formula of the proofing notation read: בלגת אלמלאלו וה管线 [äänos acq] (MS Paris Hébreu 578; see Codices hebraicis, Part III, ms. 59). The text reads as follows בונה אלמלאלו ובויר אלר אלס אלף ארבעה ומשהו ומשהו ומשהו (MS Paris Hébreu 578; see Codices hebraicis, Part I, ms. 67. Joseph Fenton has drawn my attention to MS Oxford MS. Hunt. 382, deriving apparently from 15th century Aleppo, in which the formula בונה אלמלאלו is written with red ink at the bottom of each page in every quire. No doubt, this phrasing is an abbreviation. MS St. Petersburg Exp.-Apa6. I 1475 (See Codices hebraicis, Part III, ms. 59). The text reads as follows בונה אלמלאלו ובויר אלר אלס אלף ארבעה ומשהו ומשהו ומשהו (MS Paris Hébreu 578; see Codices hebraicis, Part I, ms. 67. Joseph Fenton has drawn my attention to MS Oxford MS. Hunt. 382, deriving apparently from 15th century Aleppo, in which the formula בונה אלמלאלו is written with red ink at the bottom of each page in every quire. No doubt, this phrasing is an abbreviation. MS St. Petersburg Exp.-Apa6. I 2183, fol. 2r. Another folio from this copying is found in the same library: MS St. Petersburg Exp.-Apa6. I 1866 (See Codices hebraicis, Part IV, ms. 80). MS Oxford, MS. Poc. 393 (Neubauer Catalogue 217). MS Paris Hébreu 631.
by a German copyist appears in a colophon of a manuscript from 1408. The anonymous copyist: ליל י' שבט ליל ב' קס'ח אחר גמרתיהו חזרתי והגהתיו.

Two late manuscripts are exceptional in their inclusion, in addition to the copyist’s colophon also a proper colophon written by the manuscript’s binder. One was written in Lecce in southern Italy by two Sefardic hands, and was completed in 1485. The binding, according to the binder’s colophon, was completed sixth months later:

קשורת וקרן קְלָלִימָט זָהִי חָסְדָא לַחֲזָר בְּכַפְר פּוֹתְגָח וְקָרָם עִלִּי לְמַלְוַת (conflating two biblical verses: Psalms 131:1 and Isaiah 38:14).

In 1512, Crescas ben Shneur completed the copying and binding of a scientific manuscript in Salonika, as witnessed in his colophon: כְּתַבְתִי וּקְשָׁרַתי.

Components of the names

Usually the name of the manuscript’s copyist (or owner) was followed by the name of his father and sometimes also his grandfather, or even by the mention of several generations of forebears, and quite often, especially in the Muslim countries in both Occident and Orient, also with the addition of a kind of non Hebrew surname or moniker. Thus, in the colophons cited above, we encounter the names מברוכו הכהן בן יוסף הידוע בן אזדאד בקהיר and בנימן המנקד בן יואב המנקד ממשפחת הענוים באיטליה. MS New York R 934 was written by a copyist who uses two surnames (Finzi and Ram):

בנימין כהמ''ר יצחק ישר''ו בכ''ר בנימין בה''ר שלמה בה''ר יהודה בה''ר בנימין פינצי בה''ר מנחם זלה''ה ממשפחת ר''ם.

Many colophons, from Italy especially, note the particular provenance – the name of the town – of the copyist or the owner –which in fact became a surname, as was customary in Italy, e.g. Jekuthiel ben Shleomo of Bevagna who was commissioned to copy a manuscript in Rimini in 1378, or

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44 The manuscript was formerly kept in the collection of the Vienna Jewish Community (Schwarz Catalogue, 85) and is currently privately owned.
45 MS Parma Parm. 1782 (Richler & Beit-Arié Catalogue [Parma] 1089). The binder’s script in the colophon is not identical to his script in MS Vienna, ÖNB Cod. Hebr. 27 (Schwarz Catalogue 161), which was written in 1472 by a copyist of the same name.
46 MS New York MS 2623, written in a Sefardic script. In 1504 Shimshon ben Eliya Ḥalfan wrote for his own use, in Italy, a multi-layered manuscript (a prayer-book containing the Books of Job, Proverbs, and Psalms, in the external margins, and the Five Scrolls, Tractate Avot, and special prayers on the upper and bottom margins) in Italian and Sefardic scripts (MS Parma Parm. 1739). On the colophon he wrote: אני שמשון בכמי אילוא חליל זלהי לעיזה ולאלהי חילותי זה המסרון על כל trabalים וסידורי בארוכו ובמרשחי שם חיה עשויה על כל trabalים וסידורי בארוכו ובמרשחי שם. It is unclear whether he meant to say that he himself had bound the manuscript. The same copyist was also a hired scribe: in 1506 he copied a manuscript for another person in Merano in northern Italy (MS Copenhagen, Royal Library Cod. Hebr. Add. 4).
47 MS Paris Hébreu 401 (See Manuscrits médiévaux, I, ms. 50).
Meshullam of Velletri ben Jehiel of Terni, who copied selihot (penitential prayers) in 1418. The latter also copied two other manuscripts from Mantua, one in 1417 and the other in 1419, and presumably the selihot were also copied in that location. This phenomenon is known from Ashkenazic colophons as well, but it appears that naming one’s provenance in a town in France or Germany was not equivalent to using a surname but rather conveyed information about having emigrated from those places, even to other countries. This is the case in the illuminated colophon written by Isaac ben Elijah Hassan of Oxford (אוחסנפ'ורט), as in the colophon of Joel ben Simeon of Cologne, both mentioned above. In colophons written by Spanish and Provençal (and to a lesser degree even Ashkenazic) immigrants in Italy from the end of the fourteenth to the end of the fifteenth century one finds numerous mentions of the provenance of the copyists from these countries, noted either generically (‘French’, ‘Ashkenazic’, ‘of the nations of Provence’, as noted by Avraham ben Mordecai Farissol of Avignon in one of his colophons), or in a particular form. The copyist of the core text of MS Prague, VII 10 (currently kept in the Library of the University of Wrocław), which was written in 1439, surely in Italy, noted his provenance in Regensburg in the colophon: אני שמעון סופר בכפר עזריאל ישרי אשכנזי מרוגספורק ממשפחת איגר סימתי זה הספר בראש חדש (fol. 241v). Another example of a colophon of an immigrant copyist in Italy, in which he details his city and province of origin, can be seen in MS Paris Hébreu 1186:

אני חלפתא הסופר ב"ר אברהם הסופר ממחוז פרווינצה וארץ מולדתי עיר מרשלייא כתבתי זה הספר הנקרא שושן הרפואה אל הרופא המובהק מאי' (£טרו) יוסף פרייר יושב באנקונה העיר ההוללה והשלמתו פה מונדאביאו <Mondovi> בשמנה ועשרים יום לחדש סיון שנת אני ב'צ'ד'ק' אחזה פניך השם ברחמיו יזקכו בל🌰 והבינה סודות רפואותיו ואחיו השם בידו יצלח ויקיים בו מקרא שכתוב כל המחלה אשר שמתי בה מצרים לא אשמך עליך כי אני ה' רופאך, כן יהיה אמן (fol. 217v).

A few of the non-Hebrew surnames, including the addition of a non-Hebrew name to the first name of the copyist or owner, are preceded by the notation:"he who is

48 MS Vienna, ÖNB Cod. Hebr. 187 (Schwarz Catalogue 97), fols. 1-79.
49 See *Manuscriptes médiévaux* II, 54, 56.
50 Formerly at the Rabbinical Seminar in Breslau, Loewinger & Weinryb Catalogue 4. On the peregrinations of the manuscripts from the Rabbinical Seminar in Breslau that moved to Prague and eventually back to Wrocław (Breslau), see above, n. 11.
called’ = known as), as in the full name of the scribe of the biblical codex written in 929 in Palestine, and cited above: שלמה בן בויאעא הלוי תלמיד סعيد בן פרגוי המנוי בלוקק. Such notations are very rare amongst Italian copyists, a few of whom adopted it in the second half of the fifteenth century, in imitation of the Spanish, Provencal and German immigrant copyists, who used it extensively. Thus in Ashkenaz in 1310 we find: "שמשון הסופר ב”ר יעקב זצ”ל המכונה ויואנט החוקק חותמות."

In Provence and in Spain many Jews had a first name and a double surname, in Hebrew and in a non-Hebrew language: "משה בן מנחם דאלבורנש_completed in 1322 a decorated biblical manuscript for Mordecai ben Isaac, known as זיג工作组 דשומן; and המלמד_completed in 1404 a copying in Saragossa (סרקסטא)."

Other introductory titles that were used limitedly in the Middle East, especially among the Karaite copyists to preface Arabic names are "הידוע/הניכר" 'the known/recognised', sometimes in the locution: הידוע/הניכר בבן/באב.

Sometimes names were followed by a professional designation (apart from the designations ‘the scribe’ or ‘the vocaliser [הלבלר, המנוקד], such as המרומש (the physician), which was relatively common in Italy, or המלמד (the teacher), which was common in the Middle East.

**Blessing formula for the living and deceased**

Names were usually accompanied by blessing formulae for the living and the deceased, which are often represented in acronyms, and many of which are based on biblical verses. Sometimes these formulae are unique to one or another geocultural zones, some were used in only two zones, and others are found in most zones but are characteristic of particular regions. Clearly not only copyists used these formulae in writing colophons but they were used (presumably with comparable distributions) for other texts as well, but their frequent use in thousands of colophons and the classification thereof reveal patterns of usage that can help us identify the provenance of a manuscript and of texts in general. The following are a selection of formulae:

**Blessings for the living**

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51 A biblical reading corpus, MS London Ad. 10455. The text presents his non-Hebrew name, and his Hebrew title derives from his second trade.
52 MS Jerusalem Heb. 4° 780 (See Manuscrits médiévaux I. 31).
53 MS Paris Hébreu 3 (See Manuscrits médiévaux II, 45).
54 Zunz already devoted considerable discussion of these formulae in his book Zur Geschichte, pp. 304-389.
or, in non-acronym form סוף טוב, סופה טוב – a blessing formula used in Muslim lands only, in the Middle East (except Yemen), from the beginning of the eleventh century and in Spain and North Africa from the beginning of the thirteenth century.

סופן טוב, etc. – this familiar blessing is quite rare in medieval colophons. It was in use by copyists from all zones, except for Yemen and Ashkenaz, and by Sefardic copyists even outside Spain.

סופא טבא, סופיה לטב – this formula was in use in all zones, especially by Sefardic copyists in all zones.

נסוריה רחמנא וחנניה/וסייעיה – this formula presumably evolved as an abbreviated form of סוףא טבא, although it first appeared in Ashkenazic colophons. It was used in Italy in the second half of the fifteenth century (compare above, chapter 1, n. 142).

ישריה צורו – this formula was used only in Muslim lands, both in the Orient and Occident.

ישריה (ישמרה צורו) – an exclusively Italian formula which first occurs in a colophon from 1332, and which appears in eleven percent of Italian colophons (the rate is even higher, if we exclude manuscripts written by immigrants).

יראה רע אויר יומם (יומם) [Isaiah 53:10] – a common formula exclusive to Italy, of which the first extant example is from 1289. From 1387 we find in two-thirds of Italian colophons the same formula with an added ע (aleph) at the end, ייינא, which represents the word amen.

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55 It is no wonder that at the end of the 15th century it can be found in the colophons of Sefardic (or Sicilian) immigrants in southern Italy.
57 Copyists outside Italy sometimes used the full verse as a blessing for the living, but not in the form of an acronym. In MS St. Petersburg Eng. II C144 written by a Maghrebi scribe in Alexandria in 1122, the copyist cited the full verse יראתי רע אויר יומם – without the addition of the word amen (See Codices hebraices, Part III, ms. 60). A few Italian scribes from the end of the 13th century until the beginning of the 15th century used only the second colon of the verse as a blessing formula, in acronym form – ייינא.
58 MS Parma Parm. 1119, copied in Bologna. An unusual use of the formula outside Italy is found in the problematic colophon by AvrahamAvraham <ben> Mordecai Farissol, written (ostensibly) in Avignon in 1467/8, before this scribe immigrated to Italy where he copied sixty manuscripts that survive to this day. The colophon appears in MS Parma Parm. 1957, which contains a collection of works, most of which were copied in Italy by AvrahamAvraham Farissol or by his disciples, under his guidance, at different time periods (for a detailed codicological description of this composite collection see the Richler & Beit-Arié Catalogue [Parma], 1349). This colophon relates to one of the works,
and in non-acronym form ייחיה לעד – the formula was in use in all zones except for Yemen, but especially in Byzantium, and when first used, only the full form was employed.\(^9\)

( ראשי תיבות תמים טובים – a formula of relatively limited use in Germany and Eastern Europe only, from the end of the fourteenth century, and in Italy during the latter third of the fifteenth century among immigrant scribes using the Ashkenazic script.

The following are a number of rare formulae:

\(\text{צב"י} \) (צדיק באמנותו יחיה [Habakkuk 2:4]) – a formula appearing in several European manuscripts, (excluding Byzantine ones).

\(\text{אי"ש חי"ל} \) (אֹּֽחֶֽר יָמִֽים שָׁנָֽה חַיִּים יְֽשַׁיֲפֻֽו לָךְ [Proverbs 3:2]) – this charming formula, which puzzled many who attempted to decipher it, some assuming it to be a Hebrew translation of a surname, until Zunz unlocked its meaning,\(^6\) occurs only in a few European manuscripts, mostly apparently from France.

\(\text{ממקומ"י} \) (מחץ מתנים קמיו ומשנאיו מן יקומון [Deuteronomy 33:11]) – the formula appears in a few colophons from the Orient, Byzantium, and Morocco, in the latter third of the fourteenth century and during the fifteenth century.

\(\text{לשי"ש} \) (לפני שמש ינון שמו [Psalms 72:17]) – the formula appears only in one colophon written by the grammarian and scribe Isaac Zar in a Sefardic script in Ferrara in 1448 (Ms Paris Hébreu 933).

At the end of the fifteenth century, as more manuscripts were being copied for women, a number of special blessing formulae came into use:

\(\text{מב"ת} \) (מנשים באֹהל תבֹּרַך [Judges 5:24])

\(\text{תמ"א} \) (תבֹּרַך מנשים אָמָן) – also borrowed from the same verse in the Book of Judges.

**Blessings for the deceased**

placed at the beginning of the bound collection. Farissol did not copy this work but only added initial words and for some reason wrote a colophon at the beginning. Perhaps Farissol only added this opening colophon, which documents his activity in Avignon, some time after he immigrated to Italy (he wrote the first Italian dated manuscript in 1470 in Mantua – MS Oxford MS. Opp. Add. 4° 177, Neubauer Catalogue 2567), after he became aware of the Italian formula?

\(^9\) See *Codices hebraicis*, Part II, ms. 24, from 1029.

\(^6\) Zunz, *Zur Geschichte*, pp. 302, 305 (Zunz erred in his citation of the verse אֹֽחֶֽר יָמִֽים שָׁנָֽה חַיִּים יְֽשַׁיֲפֻֽו לָךְ). See *Codices hebraicis*, Part I, 6, 11.)
ז"ל – the most common formula in dated colophons, employed in all zones and especially in Italy and Spain. In the Orient, the source of the earliest manuscripts, it appears as early as the eleventh century.

[Proverbs 10:7]) – an expanded form of ז"ל, or perhaps conversely. ז"ל is an abbreviation of זצ"ל which is based on scripture, and almost as common as the former, also employed in all zones, but more frequent in Italian colophons.

זצ"ל – an expanded form of the ז"ל formula.

ז"ל – a frequent formula in all zones, but especially common in Italy, and less frequent in Ashkenaz and in the Orient.

ע"ה – this formula was first documented in a Sefardic manuscript from 1225, and was used until 1540 (the last year for which a dated manuscript is documented) in sixty colophons from Spain and Italy and in some manuscripts from other zones (a few manuscripts from Byzantium).

נ"ע – one of the most frequent formulae, employed in all the zones, but to a limited extent in Ashkenaz and Yemen. In the Orient it occurs as early as the eleventh century.

תנצב"ה (תהי נשמתו צרורה בצרור החיים [according to I Samuel 25:29]) – a fairly frequent formula (always as an acronym) and especially in the Orient. It appears for the first time in MS St. Petersburg Евр. II B 8, which was written by a Maghrebi scribe in Palestine in 1020/11. In Ashkenaz it occurs only in one colophon.61

The following are less frequent blessing formulae for the deceased:

נב"ת (נפשו בטוב תלין וזרעו יירש ארצ [Psalms 25:13]) – the formula is represented in all zones, and sometimes occurs in abbreviated form: הבת.

רי"ת (רוח ה' תניחנו [Isaiah 63:14]) – the formula appears in colophons from Muslim lands from the eleventh century onward, and most conspicuously in Yemen.

מב"ע (מנוחתו בגן עדן) – a formula that occurs in Italian colophons.

61 In MS Parma Parm. 2765 (De-Rossi Catalogue 542), copied in Germany in 1384/5, its single occurrence is puzzling given the prevalence of the formula (especially in full form, sometimes combined with another blessing) on tombstones in Germany throughout the 13th century; See A. Reiner, ‘From “Paradise” to “Bound in the Bonds of Life” - blessings for the Dead on Tombstones in Medieval Ashkenaz’, Zion, 76 (2011), pp. 6-10 (in Hebrew).
– the formula occurs in Yemen only and sometimes as נוחו גן עדן representing an alternate word order. In MS St. Petersburg Eap. II C144, written by a Maghrebi in Alexandria in 1222, the full form נוחו גן עדן appears.

– a formula documented as early as the twelfth century in the Orient and from the thirteenth century onwards it is also documented in other regions.

It seems that in Italy, at least, there were unique blessing formulae for copyists (male and female) which were either remained in the exclusive use of certain scribes or were adopted for use by other copyists. Of this kind, apparently, were the formulae used by the Italian copyists Menahem ben Binyamin in the late thirteenth century as well as those used by the scribe Paula bat Avraham ben Yo’av, who was active in Rome.

Cf. B. Berakhot 104a.

Four manuscripts copied in Italy between 1285 and 1289 by a copyist named Menahem ben Binyamin have survived: MS Paris Hébreu 1221, copied between 1285 and 1287; a manuscript copied during the years 1286-1287 (in the copying of which another copyist also participated) has survived nearly its entirety in MS Parma Parm. 2784, and part of the missing section at its beginning has been located in MS New York MS 8124 (see below, n. 224); MS London Or. 6712, copied during the years 1287-1288, and MS Cambridge Add. 173, from 1289. For full details on these manuscripts and other manuscripts copied for him see Manuscrits médiévaux, II, 13. What these manuscripts have in common is their copyist’s use of fixed blessing formulae – one for the living and one for the deceased – in acronym form. At least one of these formulae, as well as the combination of both, are particular to this individual copyist. In MS Paris, MS Parma, and MS Cambridge, the obscure acronym ישל"ם accompanies the name of the copyist Menahem. In MS Parma and in MS Cambridge written after the passing of Menahem’s father, the father’s name is accompanied by the formula לעי"ץ (already deciphered by Zunz as לזכר עולם יהיה צדיק [Psalms 112:6]; cf. Manuscrits médiévaux II, 13, n. 5). In all four manuscripts the two formulae were combined in acronym form of the copyist’s full name מ"י בב"ל, i.e. מנחם ישל"ם בן בנימין לעי"ץ. In MS Toledo, Cathedral Z-86-25, whose date of copying is unclear (See Manuscrits médiévaux, ibid.) the formula ישל"ם is included in the copyist’s documentation of the date of a son’s birth, as customary in Italy: סימן יפה ליצחק יזי"י ביר' מנחם ישל"ם.

The obscure blessing formula for the living ישל"ם is unique and is known only from Menahem ben Binyamin’s use of it, and in any case no other formulae resembling it can be found in even one of the thousands of extant colophons. While indeed the blessing formula for the deceased לעי"ץ is not unique to Menahem ben Binyamin, its use among Italian copyists is very scarce, and no copyist ever used it before him. It therefore stands to reason that it was the copyist Menahem who coined this blessing formula and appended to his father’s name, just as he coined the term ישל"ם and appended it to his own name in interlinked combinations that became standard elements of his full name and signature identity markers. For a more detailed discussion see M. Beit-Arié, ‘The Identity of the Kabbalist Menahem Recanati,’ Tarbiz, 67 (1998), pp. 573-577 (in Hebrew).
during the same time period and even produced one copy for the same Menahem ben Binyamin.\(^{64}\)

Generally speaking, the great variety of blessings for the living and for the deceased which were in use in Italy is remarkable. An instructive example of the variations in the blessing formulae can be seen in the colophon of a manuscript that Menahem ben Shabtai wrote for himself in 1423 in Montepulcian in central Italy. The copyist noted the names of his forefathers in a line going back seven generations and added two different blessing formulae for the living, for himself and his father, and five different blessing formulae for the deceased for his forefathers: בֵּכְמֹריַ שֵׁבַטְי מִשְׁרָה בֵּכְמֹריַ יֵחָאָל זְעַל בֵּכְמֹרֶה רְבִּיֶּהוֹדֶל גְּלַחְיָה בֵּכְמֹרֶה שְלִמה בֵּכְמֹרֶה שְׁמוֹאֶל גְּלִיקוֹ.\(^{65}\)

**Honorifics**

Apart from the blessing formulae following the names of the copyists (and of course, of authors), many scribes would use a variety of honorific titles to preface the names of their fathers and the name of the person who commissioned the copy; these were mostly given in abbreviated or acronym form, some in flowery turns of phrase, some even displaying local linguistic usages, especially in Italy. Many of the honorifics pre-facing the names are stylized phrases such as היקר (‘the honoured’) - the most common title in all colophons across zones, and most conspicuous in the Orient and in the sphere of Sephardic culture; החכם (‘the sage’) - a widespread title in all the zones, even in the early manuscripts, especially in Spain, but rare in Ashkenaz; הנכבד (‘the respectable’) - also a common title from the very early period in the Orient which spread throughout all zones except for Ashkenaz, where it was rarely used; המשכיל (‘the learned’) - from the eleventh century a standard title in all zones, especially in

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\(^{64}\) On the manuscripts copied by this skilled and learned scribe, the first of the female scribes known to us, see above, n. 11. In the colophons of MS Breslau-Prague-Wroclaw, written in Rome in 1288, and of the monumental MS Oxford, which was completed in 1293 on behalf of her relative Menahem ben Binyamin (no doubt, the abovementioned copyist, who, as stated, consistently employed the blessing formula for the deceased that was exclusively bound in his writings with his father’s name, and was hence adopted by Paula), we again find the use of this unique blessing formula in conjunction with her grandfather’s name: פּוֹלָה בת ר’ אברהם הסופר ביר’ יואב צי”ע. It may be that Paula coined the blessing formula for the deceased or that the use of the formula צי”ע was customary in her family (presumably an acronym for the verse וַיִּשַׁדֶּק יִשְׂרָאֵל [Habakkuk 2:4], without the initial conjunctive waw at the beginning). She employed it not only in these two manuscripts but presumably also in the manuscript kept by the Jewish community in Verona: it is safe to assume that Berliner (see above, n. 11) erred slightly in his reading of the blessing formula for her paternal grandfather Joab (יואב) and wrote צי”ע instead of צי”ע. See S. Ashkenazi & D. Jarden, *Thesaurus of Hebrew Abbreviations*, Jerusalem 1969 (in Hebrew), entry צי”ע.

\(^{65}\) *Manuscrits médiévaux*, II, 63.
the Orient, but undocumented in Ashkenaz. Many other titles appear to a lesser extent in all the regions, e.g. הנבון ('the wise') - not in Ashkenaz; מראר ורנאו ('our teacher and rabbi', in Aramaic) - not in Ashkenaz; התפירה, התפאר, התפארת, etc.

Copyists frequently combined several such honorific titles, and in the Orient and in Spain, even extravagantly so. See, for example, a colophon of a manuscript of an entire Bible, written in Toledo by the son of a famed scribe in 1276/7:

A later example of the heaping of flowery titles (some of which appear in the previous colophon) can be seen in a colophon of a Pentateuch from 1478, which was written by one of the sons of another admired scribe—Benaya ben Sa'adia:

However, our chief interest lies in the prevalent patterns of honorific titles, most of which were written as acronyms and formulaic abbreviations. When these titles refer to previous generations, and indeed most of the honorifics used were attributed to fathers, the word בן prefaces these acronyms. The most common title in all zones during all periods was the abbreviation ר (sometimes appearing in full form רבן, רב).
in the independent form or with the letter ב, representing the word בן, affixed to it (ב'י, בר, יבר, יברון, or without the apostrophe indicating an acronym, appearing like the word for ‘son’ in Aramaic – particularly in the Orient – and sometimes בור). These formulae are used in around half of the colophons. Moreover, the distribution of the standard abbreviation י is even wider, since it is the basis for most of the other formulae, which are derived from it. This can be seen in the titles characteristic of (and some exclusive to) Italian colophons: the coinage common almost only to Italy (probably יב and similar to it (גם יבר יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון יברון 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The second example is of two colophons appearing in the six-volume Hebrew translation of Maimonides’ commentary on the Mishna, written in 1223, precisely one-hundred years after the writing of the previous colophon, undoubtedly in Fustat, Egypt.71

גנמר סדר קדשים בעוץ כדי ינה כנסי שליח אתחקילה לשורות וברח ציון ויבא אח הוד שמלת חל יד סדרת י幼儿 קדש המחודש לברית המсот לברית המсот מרום וברך העזר והברך הממון יברן.

וסכם יתירה בטטר כמי י}"הכל מקום טוקה זדעת זה ויי ציון.

Copyists’ expressions of humility

In contrast to the use of honorific titles to exalt those who commissioned the copies, many copyists would preface their own names with titles of diminution, in which formulaic patterns may be discerned.72 This practice is attested in approximately one-sixth of the colophons. Although titles of diminution are found in all zones their relative greatest distribution is apparent in the Orient and especially in Yemen. The phenomenon was more common in the Middle Eastern lands, and moreover, the copyists in these regions exaggerated the expressions of humility and were much more self-deprecating than in other regions. By way of contrast, Ashkenazic copyists used such titles sparingly, and moreover, they used a limited selection of only brief titles, especially the title הצעיר (‘the young’) – the most common formula employed in all regions, with different distributions, or הקטן (‘the little’), which title also was used to a lesser extent in all zones. A number of formulae used in the Orient are unique and can tell us much about the origin of the copyist. The title העבד (‘the servant’), for example, whether used alone or as the initial element in a list of titles, was prevalent in the Orient (except Yemen), almost exclusively, from the twelfth century onward. Sometime the title העבד was followed by a string of various titles, e.g. הצעיר והקטן העבד והקטן השולי הצעיי ושהרי והקטן הנכלה הנכלה.73 Often these strings

72 Steinschneider provides a number of examples, Steinschneider, Vorlesungen, p. 42.
73 MS St. Petersburg Евр.-Араб. 1817, from 1452.
were concluded with another common Oriental coinage. The formula כאל kunne�וורה (or כאל kunneון), as well as the formula כאלونة כאל, are unique to Yemen. A formula typical of the Byzantine copyists is תולעת ולא איש.

The following are further examples of expressions of humility, some standard formulae: הנאמר, המלוב, שעירה (ועירה) דוע בריא, המלוב, עלוב וה الأسبوع, עלוב והueblo, עלו ובשלס, דוע ובשלס, עלו ובשלס, דוע ובשלס.

The well known scribe Benaya ben Sa’adya combined the two formulae in the colophon of MS Oxford MS. Opp. Add. 4° 97 (Neubauer Catalogue 2328), which he wrote in San’a in 1461:

MS Roma, Bib. Emanuele, Or. 76, copied in Italy in 1454.

75 The well known scribe Benaya ben Sa’adya combined the two formulae in the colophon of MS Oxford MS. Opp. Add. 4° 97 (Neubauer Catalogue 2328), which he wrote in San’a in 1461:

76 MS Roma, Bib. Emanuele, Or. 76, copied in Italy in 1454.
Appendix: How did scribes disclose their names by the copied text and multi-handed manuscripts?

Even when a book is uncolophoned, or when the colophon has been lost, it is possible in many cases to identify the copyist’s first name with a reasonable degree of certainty (and sometimes even his father’s names and titles). A custom among copyists and masoretes, of which anyone examining an uncolophoned manuscript should be aware and sufficiently alert to notice, reveals the names of anonymous copyists: Hebrew manuscripts contain particular letters or words which were marked, decorated or highlighted in a variety of ways, as I shall detail below, thus disclosing the name of the copyists. This phenomenon, it seems, is unique to Hebrew scribes, and may bear some resemblance only to the practices of colophon writing in Samaritan manuscripts of the Pentateuch. Recognising this prevalent scribal “trick” or stratagem provides us with a highly useful tool for identifying copyists in uncolophoned manuscripts and assists us in differentiating multiple hands involved in the copying of one book, and which may have used different exemplars of the same text. This scribal custom was already noted by the forefather of Hebrew bibliography and codicology, Moritz Steinschneider, but in truth, had been alluded to some seven hundred years earlier in the remonstrance by the author Sefer Ḥasidim, a point of view discussed by others even before Steinschneider. Sefer Ḥasidim sharply rejected the practice, a fact that most likely attests to its prevalence among Ashkenazic copyists at the turn of the twelfth and thirteenth century:

יש שכותבין ספרים או פירושים,ennentו מכתנים וכתיבים בardash הנית את שם וחתות. ויכ בושם שם ישמע והתנן את הקטן ואהפוך וכתיבת ב –vela ז经开区


Steinschneider, Vorlesungen, p. 45. I discussed this phenomenon briefly in a number of past publications; see especially, Beit-Arié, ‘Ideals Versus Reality’, pp. 562-563.

In the parlance of Sefer Ḥasidim the term ספרים, unqualified, usually refers to biblical books.

The term הכתנה means ‘change the order of the words’. Although biblical books are mentioned, it is unlikely that scribes copying biblical books omitted or changed the order of words in order to indicate their names.
In Spain, a similar prohibition was included in *Sefer Hayir'a*, a work by Rabbi Jonah Gerondi (1200-1263), who had studied in yeshivas in France, and was influenced by the ethical teachings of Ashkenazic piety. Indeed, the author of *Sefer Hasidim* (and Jonah Gerondi like him) condemns a stratagem which was extremely prevalent among Hebrew copyists in practically all of the geocultural zones of medieval Jewry, and not necessarily in Rhineland. He refers to the scribes’ practice of using a simple ornament to highlight the letters of their names when they occurred at the beginning of a line within the copied text, not necessarily in sequence; this usually involved marking three or more dots above the letter slanted toward the margins, as in the

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82 *Sefer Hasidim*, eds. Y. Wistinetzki and J. Freimann (in Hebrew), section 706 = *Sefer Hasidim*, MS Parma, p. 136. The citation is in reference to the manuscript. In the Wistinetzki edition, instead of יעשה, the last word erroneously reads יעש, פיסוה. In the Bologna edition, 1538, section 136 (fol. 19v) a similar condemnation is added: יש שרשף יקרא – לא וsoeverין המסרפים יכות לא וсорשין יהוě ישן ומכים, ולקם ומדך ישן יכתו, ומכים. Carlo Bernheimer, *Paleografia Ebraica*, who cites this source on p. 386, indicates only two examples of the occurrence of this scribal custom in manuscripts (p. 152, n. 1).


84 According to the version of MS Oxford MS. Opp. 340 (Neubauer Catalogue 875), an Ashkenazic manuscript from 1298/9 fol. 130r; in MS Parma Parm. 1940 (De-Rossi Catalogue 1440), an Ashkenazic manuscript from 1297/8 the text reads יעשה. In this manuscript, like MS Oxford MS. Mich. 569 (Neubauer Catalogue 1098), and an Ashkenazic manuscript from circa 1288/9 (See Neubauer & Beit-Arié Catalogue, for this entry) the text reads יעשה; יעשה – יעשה תיבות; a similar version, derived undoubtedly from *Sefer hayir'a*, appears in *Sefer hapli'a*, cf. Torat haqana: *Sefer hapli'a*, Jerusalem 1997, p. 147a (I am grateful to my friend the late Joshua Mundseim who brought this source to my attention). Ya’aqov Reitman, who cited both these locations, based on other sources, in his book *Arba’a ha’orashim* (Prague 1860, pp. 10-11), and surmised that the text in *Sefer hayir'a* was the source for *Sefer Hasidim*, argued that these passages refers to the acrostics of liturgical poets (paytanim) and not to scribal practices, but Moritz Güdemann already correctly observed, as the text plainly states, that they refer to scribes. See M. Güdemann, *Geschichte des Erziehungswesens und der Cultur der abendländischen Juden während des Mittelalters und der neueren Zeit*, vol. 1. Wien 1880, p. 193. And yet, in 1891 Wistinetzki still wondered, in the edition of *Sefer Hasidim* that he prepared from MS Parma (see above, at the beginning of n. 82), whether the book was referring to the practices of paytanim.

85 On its widespread use in manuscripts produced during and around the period of Ashkenazic Pietism in Germany and northern France, see Beit-Arié, ‘Ideals Versus Reality’. In this article I attempted to gauge the social influence of Ashkenazic Pietism by confronting the instructions, guidance, and prohibitions regarding scribal copying practices with actual extant manuscripts from the regions where the movement operated and made an impact. This investigation, which juxtaposed elusive textual evidences, subject to varying and contradictory interpretations, with authentic ‘archaeological’ artefacts of that time, showed that all of the scribal practices that were condemned and prohibited by *Sefer Hasidim*, continued to prevail in these manuscripts. This codicological inquiry may make a modest yet significant and measurable contribution to the fundamental and ongoing debate about the nature of this movement: did it provide an outlet for the radical desires of a small elite whose degree of influence was quite limited, or was it a popular movement that appealed to the public at large, which embraced and received it allowing it to shape its social reality?

No doubt, the scribe’s desire to highlight or disclose his name in this way could have affected the layout of the text he was copying, as can be clearly seen in the manuscript, and it could even have tempted him to deviate from strict loyalty to his model, as argued by the author of *Sefer Hasidim*, who presumably sharply condemned the custom not only out of concern that the text be corrupted, but also because of his anti-individualistic orientation.

However, *Sefer Hasidim* alludes to only one variation of this scribal trick, while in reality two were commonly used. The other variation, much more frequent and more easily implemented was the ornamentation of a word with an identical spelling to the copyist’s name, when it appeared in full in the copied text, especially at the two edges of the line and usually at the beginning of the line.

Highlighting the name in this way was sometimes done simply and unobtrusively, as when the copyists’ names were indicated in acrostics, and sometimes it was done ostentatiously with complex

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87 *Ibid.* plates 5-7. See also Manuscrits médiévaux, Plates, II, 48, 69 (scribe 1 and scribe 2); III. 2a, 23b, 68b. On Paula’s copyings, see above n. 11, and in the part of the passage the note is in reference to.

88 Beit-Arié, ‘Ideals Versus Reality’, plates 8-10. And see Manuscrits médiévaux, Plates, Part I, (scribe 2) 62, 84, 134; II, 46a (scribe 1); III. 16. Descriptions volume, 1, 133. For a selection of plates of manuscripts pages in which both styles of highlighting exists, see M. Beit-Arié, Meqorot le-qodiqologia u-paleograafia ’ivrit, ed. T. Leiter (mimeographed), Jerusalem 1994, pp, 129,137-143,145., 185. 188, 189.
ornamentations\textsuperscript{89} or even decorations. Ostensibly, the use of this stratagem involved no special manipulation of the copy, however the many occurrences of the copyist’s name at the end of lines in manuscripts (in Ashkenaz especially) suggest that the copyists might have been likely to crowd together or space out the text, or even to alter the word order, or perhaps even to delete or add words – a hypothesis, which is of course testable.

The said stratagem was exceedingly common in all zones apart from the Middle East. It was implemented in all the copied texts, unrestrictedly. Even copies of the Bible were not immune from this scribal intervention. It took root so fiercely that it became embedded even in the early printed copies from Prague, which were printed on parchment and ornamented by hand, reflecting the transition from manual book craft to mechanical production, and their hybrid forms in early printing:\textsuperscript{90} in a prayer book printed there in 1515/6 on fol. [55]r (in a copy formerly kept at the London Beth Din, and currently in a private collection) and in 1518/9 on fol. [54]r (in a copy held by the Israel National Library)\textsuperscript{91} the word \textit{ומאיר} occurring at the beginning of a line was highlighted by two pairs of dots above the word, apparently to indicate the name of the printer Meir ben David מְעַטְיס.\textsuperscript{92} The highlighting of names – whether indicated in the copied text in acrostics in the first letters of a series of lines, or by singling out an identical word – can be discerned in a quarter of the extant dated and colophonied manuscripts from all zones. The rate of the use of such a stratagem is not uniform across geo-cultural zones. Indeed, it is more prevalent in manuscripts produced in zones of Ashkenazic book culture (the German lands and its neighbours, and northern France), in which it is found in half of the dated manuscripts before 1500. It appears in 33 percent of the many dated manuscripts written in Italy, some written by immigrant scribes from Ashkenaz,

\textsuperscript{89} See e.g. Beit-Arié, ‘Ideals Versus Reality’, plate 8. This plate presents a page of a biblical text copied by Elijah ben Berechiah HaNaqdan, in 1239 in France, in which the scribe uses complex ornaments to highlight his name in four places in which it occurs (three of them at the end of a column, and one at the top).


\textsuperscript{91} Its call mark in the National Library of Israel in Jerusalem is R 8° 91A517 (until recently held in the Schocken Library). The same occurs in a copy whose printing date is unclear (it may be a slightly different copy of the 1518/9 edition), which is kept by the Jerusalem Italian Jews Association.

\textsuperscript{92} An acronym for: Me’ir writer of phylacteries and mezuzas, which demonstrates that many of the early printers and typesetters were formerly scribes.
Spain, and Provence. Manuscripts produced in the Byzantine zone reveal a proportion similar to the general average (26 percent). In the Sefardic zones of book culture, the use of the stratagem in dated manuscripts is very limited, no more than 17 percent. The highlighting of names in the Middle Eastern lands is extremely rare. In Yemen it was never used, while in other areas of the Orient it is found in only 4 percent of dated manuscripts, most of them late, from the fifteenth century, and some of which were written by immigrant scribes. The highlighting of the name was therefore adopted only to a small extent in the Muslim lands: in the East it was hardly used at all, and in the West its spread was limited.

The chronological distribution of the use of this method was not uniform, of course, neither globally, nor in each of the zones. However, it is interesting that despite the differences in its frequency in all the regions where it appears, the practice reaches the height of its use in the fourteenth century: 63 percent of all the dated manuscripts that were documented from Ashkenaz, 37 percent from Italy, 38 percent from Byzantium, 27 percent from the zones of Sefardic book culture. In the fifteenth century, the period in which Hebrew book craft and design achieved their most consolidated form, and from which the largest number of dated manuscripts has survived (some 50 percent of all manuscripts before 1540), the use of the stratagem actually declines, down to 13 percent in the Sefardic regions, 29 percent in Byzantium, and 43 percent in Ashkenaz.

The earliest documentation of the scribal practice of highlighting one’s name can be found in the zones of France and Germany, where, as noted, it was more prevalent than anywhere else. The oldest dated manuscript in which the letters of a name were marked in a copied text is the dated section of the famous Florence manuscript of the Babylonian Talmud (MS Firenze, Bib. Nazionale, Magl. II-I-7), which was completed in 1177, and is the foremost of extant dated manuscripts from regions of Germany and France, although the originality of the highlighting in this manuscript should undoubtedly be questioned. Even if the letters in MS Firenze were highlighted by the

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93 On p. 148, the name יִזְחָק was highlighted by marking points over the letters of the name occurring in a word at the end of a line, in a word at the beginning of the following line, with the last two letters of the word appearing in the middle of the line. David Rosenthal had already noticed these markings, but he had reservations about whether they were meant to highlight the scribe’s name; see his introduction to the facsimile edition of the Babylonian Talmud, MS Firenze, Bib. Nazionale II 9-7, Jerusalem 1972 (Vol. 1, p. 4, and n. 27). Indeed, it is quite clear that these highlights were not added by the copyist: the highlighting style is uncommon, certainly for such an early time period, the copyist could have highlighted his name in an earlier occurrence in the text, but avoided doing so, and it is also unlikely that he would choose to indicate his name in an unappealing passage from Tractate Bekhorot (B. Bekhorot 29b), cf. Codices hebraicis, Part IV, ms. 79.
scribe, it seems likely that this manuscript was preceded by an uncolophoned Ashkenazic manuscript, produced surely in France, a copy of Vitry Maḥzor from the collection of Avigdor Klagsbald, formerly MS Sassoon, 353, which contains the name גמליאל decorated in several of its occurrences in the text. The oldest dated Ashkenazic manuscript which includes an indication of locality and also contains the abovementioned stratagem is MS Vatican, Vat. ebr. 468, a biblical manuscript copied in La Rochelle, in 1215.

In the Sefardic zones the stratagem first appears as a marking of the first letters in a line, as in an acrostic, in Yehuda ibn Tibbon’s translation of Jonah ibn Janaḥ’s Sefer Hashorashim, which was written in 1241. Among the dated Italian manuscripts, of which only a few that predate the thirteenth century have survived, the use of the stratagem can be clearly discerned in the hand of the one of the copyists who participated in the writing of a manuscript in 1266 in Salerno in southern Italy. The

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94 Ohel David Catalogue, pp. 305-313.
95 On pp. 9, 274 (twice), 291, 501. Undoubtedly, this manuscript predates MS Firenze. It was written in the second quarter of the twelfth century, between 1123/4 and 1154/5; see S. Stern and J. Isserles, ‘The Astrological and Calendar Section of the Earliest Maḥzor Vitry Manuscript (MS ex-Sassoon 535)’, Aleph, 15 (2015) pp. 199-318, especially pp. 207-208. The codicological profile of the manuscript demonstrates that it is one of the earliest codices to have survived from France or Germany. In another manuscript of the Vitry Maḥzor, MS Parma Parm. 2574 (De-Rossi Catalogue 159), whose codicological traits suggest an early date, although its inclusion of Sefardic piyyutim rule out a date prior to the second decade of the 13th century (Prof. Yonah Frankel, personal communication), the name Yitsḥaq is highlighted several times, and the letters of the acrostic Yitsḥaq ben Netan’el ([fol. 37r]) are decorated once. Many highlights of the name Shemuell occur in the copying of one of the undated Ashkenazic manuscripts, which appears to have been written in the second half of the 12th century – MS Oxford MS. Laud. Or. 328 (Neubauer Catalogue 179, and cf. Neubauer & Beit-Arié Catalogue, in the entry for this manuscript).

96 This is the first manuscript that clearly proves that the highlighted name is indeed the copyist’s name, since in all of the earlier dated manuscripts employing the stratagem the copyist was anonymous, see below. The same scribe copied another biblical manuscript, commissioned by a different person: MS Vatican, Vat. ebr. 482 from 1072/3. This manuscript lacks a date in its colophon, which is not intact. Here too, the copyist highlighted his name when it occurred in the biblical text.
97 MS Vatican, Vat. ebr. 54, fol. 11v displays a highlighted acrostic of יהושע. The name of the copyist was effaced from the colophon.
98 MS Parma Parm. 2750 (De-Rossi Catalogue 422). In MS Paris Hébreu 163, written in Italy a short time before, in 1253, the letters of the scribe’s name (explicitly mentioned in the colophon) were highlighted at the opening and ending verseshe composed between the different works (cf. Manuscrits médiévaux, II, 8). In our discussion we did not take acrostics of this type into account, all the more so because the markings of the acrostic in this manuscript are not positioned at the beginning of verses but rather at the beginnings of words, and sometimes even in the middle of them. Therefore it may be correct to likewise ignore a similar phenomenon in the earliest dated Italian (and European) manuscript, MS Vat. ebr. 31, from 1072/3, in which the copyist’s name is not mentioned in the colophon inscribed at the end of this codex. In his catalogue, Moshe David Cassuto hypothesized that his name was יהושע, because he notice that the letters mem (מ), shin (ש) and he (ה) were marked by the copyist as an acrostic in the first words of the opening verses at the beginning of each of the copied works and in the ending verse of the final work. See Codices hébraïques, Part II, ms. 38. On the other hand perhaps even the acrostics marked by copyists of the opening or ending verses should be regarded
earliest extant documentation of this practice in the Byzantine zones comes from a manuscript of Rashi’s commentary to the prophets, from 1298, one of the earliest dated manuscripts that survived from this region.\textsuperscript{99} Fragments from the Book of Deuteronomy, copied by the scribe Tobias ben Avraham of Greece in 1196,\textsuperscript{100} apparently in the Orient or in North Africa, cannot provide evidence of an earlier documentary source, because the indication of the scribe’s name by means of highlighting does not appear in the body of the text, but in the colophons of the scribe and the vocaliser (who also ‘examined’ [‘דבכ], i.e proofed, the copy), a custom widely practiced in Byzantium both by rabbinic and Karaite copyists.

The rare evidence for the use of this stratagem in Oriental manuscripts is surprising. Although most of its few uses appear in the late Middle Ages, ostensibly as an influence of Sefardic immigrants, yet the fact that it is found already in three relatively early uncolophoned manuscripts is instructive. One of these,\textsuperscript{101} written apparently at the end of the twelfth or beginning of the thirteenth century, clearly shows that the stratagem was known in the East: the anonymous copyist marked the name מיוסף thirty times, when it appeared at the beginning of lines!\textsuperscript{102} These early evidences seem to indicate that the stratagem was known in the Orient already during the time it began to spread throughout Europe, but for some reason it did not truly take hold. Before the few occurrences of the stratagem in the fifteenth century it would be found in dated manuscripts from 1314 (two manuscripts copied by the same Byzantine copyist) and from 1343, and in a group of manuscripts written, apparently, in Jerusalem by three Sefardic copyists and an Ashkenazic copyist, who joined in the copying of one of the former.

The destination of the copy had no impact on the use of the stratagem, which was not confined to copies prepared by scholars and literati for their own use, and even the

\textsuperscript{99} MS Cambridge Add. 1733, fol. 46r (highlighted in acrostic form). In respect to its date, it should be noted that the weekday mentioned in the colophon is incompatible with the day in the month that was inscribed.

\textsuperscript{100} MS St. Petersburg, Eap. II B 1532.

\textsuperscript{101} A manuscript of Midrash Tanhuma, formerly kept in the Sassoon collection 597, and now in the collection of the Segre-‘Amar family of Torino.

\textsuperscript{102} In another manuscript, MS Oxford MS. Poc. 239 (Neubauer Catalogue 858, cf. Neubauer & Beit-Arié Catalogue, in the entry for this manuscript), which is also undated, the scribe who wrote the ending (and perhaps also the beginning) of Maimonides’ \textit{Sefer haMitzvot} in Arabic, highlighted his name. This manuscript was written before 1276/7, the year in which it was proofed, but may have been copied already during the lifetime of Maimonides, who is mentioned in the colophon in the blessing for the living.
professional hired scribe did not hesitate to highlight his name. Indeed, of all the manuscripts in which the stratagem is evidenced, the number of manuscripts produced by professional or casual scribes copying on behalf of others is no less than the number of self-produced manuscripts, and what’s more, it is even much greater in all the areas in which the stratagem was used, with the exception of Byzantium.

How do we know that the highlighted or decorated names in copied texts are indeed the names of the copyists and not the names of other collaborators in the production of the book – vocalisers or masoretes, or the initiators of the production for whom the manuscripts were copied – or perhaps even the names of later owners and users? This question can be investigated quantitatively based on all the manuscripts that evidence the use of the highlighting stratagem and in which the copyists or owners are explicitly named in the colophons. From examining this corpus comprising 1392 manuscripts, of which 601 are dated manuscripts and the rest (79) are uncolophonated manuscripts with indications of the copyists or whose copyists were identified on the basis of dated manuscripts we can learn that most of them attest to the fact that the names indicated by highlighting are usually the names of the copyists.103

In forty-five dated and undated biblical manuscripts, mostly from Ashkenaz, we encounter highlighted names only within the Masora magna. Clearly, these highlights intend to indicate the name of the Masorete-vocalizer, even when it is not mentioned in the colophon, and they cannot therefore support any conclusions regarding the actual practice of copyists highlighting their names, nor regarding its scope.104

103 These numbers also include manuscripts in which names other than those of the copyist were highlighted.

104 MS Berlin Ms. Ham 80 (1) contains an uncolophonated Ashkenazic copy of the Pentateuch, Five Scrolls, and haftarot (in MS Berlin Ham. 80, which contains two volumes, two biblical manuscripts were inappropriately placed side by side – this manuscript, which was undoubtedly written at the end of the 13th century), and MS Berlin Ham. 80 (2), which includes Isaiah, the Latter Prophets, and the Hagiographa, written in Ashkenaz, in a different script in 1289/90 for Avraham ben Natan, for which see above, before the reference to n. 20). In fol. 25r the name יְחַבְבָּר was decorated seven times: six times when it occurred in the first line of the Masora in the upper margin, and once where it occurred in the lower margin.
additional highlighting of owners’ names, of the name of the person who commissioned the manuscript (found in two dozen manuscripts) as well as of other names, do not cast doubt on copyists’ practice of highlighting their own names, because in most of these cases, the copyist’s name is highlighted alongside that of the others. It is possible that some such highlights, which do not indicate the copyist in

The custom of highlighting the name of the Masorete-vocaliser in the Masora is evidenced clearly only in Ashkenaz. The examples below were found in undated manuscripts, in particular. The name אברם, for example, was highlighted a number of times in the Masora in the margins of an Ashkenazic Bible from the second half of the 13th century, written by a scribe named יצחק, who decorated his name a few times in the text (MS Vatican Vat. ebr. 3, fols. 10v, 17r, 37v; on fol. 236r the scribe highlighted the word כפר). The name שעון was similarly highlighted in the Masora of a Pentateuch with Onkelos’ Aramaic translation, the Five Scrolls, and haftarot, in an Ashkenazic manuscript from the 13th century (MS Vatican Urb. ebr. 3, written by the scribe Hayyim, who decorated his name in the body of the text). A single clear example from outside of Ashkenaz is contained in a copy of the Former Prophets which was produced in Spain in the 14th century. In the body of the text the name יעקב was decorated, while in the Masora the name יהודה was highlighted. See MS Parma Parm. 1889, 1891 (De-Rossi Catalogue 827), in two volumes: the name of the scribe appears on fol. 60r of the first volume and on fol. 150r of the second volume; the name of the Masorete appears on fol. 80v of the first volume.

This pertains to manuscripts in which the names of those who commissioned the manuscript are highlighted without a doubt, in the form in which they are explicitly mentioned in the colophon alongside the name of the copyists. The earliest such example derives from Ashkenaz in 1289/90: in a manuscript of Maḥberet Menahem and Qitsur ha’Arakh, copied by three copyists, the third copyist, Asher ben Ya’aqov HaLevi, noted that the copy had been written for his cousin יצחק ben Eleazar HaLevi. This copyist highlighted the name of the owner יצחק (MS, Bern, BB 200, fol. 250r). In a manuscript of Sefer Mitsvot Qatan copied in 1373 in Italy by Elijah ben Yehuda for Shelomo ben Elijah of Rimini, the scribe highlighted his name twice in the copied text, in the form of an acrostic at the beginning of the line, and indicated the name of the owner once, using the same technique (MS Cincinnati, HUC 152, fols. 53v סלמא stockings 80v סלמא stockings an even more comprehensive style of highlighting from the Orient, where the practice was in fact very rare. This example illustrates even more clearly how the stratagem could be used in acrostic form not only to indicate a first name (both Hebrew and non-Hebrew), but also the full name of the person commissioning the copy. In MS Oxford MS. Hunt. 134 (Neubauer Catalogue 1008) six quires of the sermons of Rabbi David ben Joshua HaNagid were copied in an Oriental script. The manuscript has no colophon, but on a few pages the scribe took care not only to mark his name and the name of the person who commissioned the copy at the beginnings of lines, but also to use highlighting to create a brief colophon that runs over three pages located in proximity, albeit non-consecutively: מוחה (the Arabic name Muhub, meaning, given, graced) and ונתן (equal to the Hebrew name Natan). He repeatedly marked his names מוחו (fols. 101r) ונתן (fols. 85r, 87v, 88v) in acrostic form, and marked the name of the owner יעקב five times. This allows us to easily identify the copyist as נתן בן אברהם בן ישמעאל בן יהודה ידיע תיפא, who copied three volumes of the same work for his own use in 1477-1484 in Damascus (MS Strasbourg, BNU 4031-4032) and in 1488 copied, also in Damascus, another manuscript for his own use (MS Moscow, RSL 1637).
single-handed manuscripts, are not name indications but rather blessing formulae. Very few manuscripts in which names other than that of their producers are indicated, and which have colophons, have survived. Among these, those that are dated derive from the fifteenth century. In a few cases the name of the copyist’s father was singled out. Highlighting in this manner in no way obscures the essence of this practice, since the father’s name is a component of the copyist’s own name (as described above in the section on ‘components of names’); this is all the more true when the name of the copyist is highlighted alongside that of his father.

Nurit Pasternak has drawn attention to the unique manner in which the name of a vocaliser was indicated by a sublinear decoration suspended from the first vocalization mark at the beginning of a line or the last vocalization mark at the end of a line or the name occurring in the edges of the. This stratagem was discerned in three manuscripts of Italian mahzor and in a biblical manuscript written at approximately the same time in Florence or in the region of Emilia Romagna. In all of them the name was identically highlighted; this was undoubtedly the vocaliser of all three mahzors and of the biblical text in the biblical manuscript.

106 This pertains to the highlighting of words such as חיים (e.g. in MS Cambridge, Trinity College, R. 15. 53, a copy of Maimonides’ Mishne Tora written in Ashkenaz in the first half of the 14th century, in which the name אליעזר was decorated several times in the text, although on fol. 34v the word עם חיסנ was highlighted), ברוך (e.g. in MS Paris Hébreu 316, written in 1344, apparently, in northern Italy by seven scribes, all of whom with the exception of one used an Ashkenazic script, in which this word was highlighted where it appears in the verse כי ברוך אני in the section of the manuscript written by the scribe who highlighted the name דוד, cf. Manuscrits médiévaux, II, 22) שלום (in MS Parma Parm. 3158 [De-Rossi Catalogue 72], written in Ashkenaz in 1380 by Menahem ben Ya’aqov for his own use; the late Mordecai Glatzer showed me this and other examples) and יחיה (in MS Hamburg, Cod. Hebr. 4, an uncolophonened Pentateuch and Five Scrolls with Aramaic translation written in Ashkenaz in the 14th century, in which the name יחיה was decorated a number of times in the main scribe’s copying, whereas in the copying of the secondary scribe, on p. 413, the word יחיה is decorated – a word which we cannot assume indicated a name, but rather a blessing. Incidentally the Masorete-vocalizer highlighted the name שמשון three times there in the text of the Masora [pp. 6, 302, 483]).

107 There are few such examples, such as in the manuscript of the Vitry Mahzor, MS New York MS 8092, which was written by Eliezer ben Shemu’el, presumably in France in 1204 (See A. Grossman, The Early Ages of Ashkenaz, Jerusalem 1988, p. 172, n. 180 [in Hebraic]), where the name אליעזר is highlighted for the most part, although the name שמעון (fol. 129r), the name of the father’s scribe, is highlighted once.

108 Including MS London Add. 19944-19945 (Margoliouth Catalogue 626-627) written by Yitsḥaq ben Obadiah of Forlì in Florence in 1441, and MS Jerusalem, Heb. 8° 4450, written by Leon <Yehuda> ben Joshua of Cesena, without a date indications, and illustrated, apparently by Joel be Simon (see below). In this manuscript the name אליעזר was highlighted in this manner many times, e.g. on fols. 79v, 83v, 111v (twice). Leon also wrote MS Hamburg, SUB Cod. Levy 26, in 1462 in Parma, and MS London 8568 Harley (Margoliouth Catalogue 629), in the years 1465-1466 in Reggio nell’Emilia.
It is possible, therefore, to determine that the vast majority of highlighted names in the thousands of medieval Hebrew manuscripts that lack an explicit mention of the copyist’s name, whether highlighted by means of marking word in the copied text (especially at the end and beginnings of lines) or in acrostic form, index the name of the copyist, and only a small minority of these may indicate names of others, such as the copyist’s father or the owner who commissioned the copy. This small minority obliges our identifications to remain tentative.109

MS Oxford, Can. Or. 62 (Florence? 1472. The first vocalisation mark of the word אברם is marked MS Oxford MS. Can. Or. 62, (Neubauer Catalogue 26) is a multi-layered codex that contains a Pentateuch with Onkelos’ translation and Rashi’s commentary in the margins, the Five Scrolls with commentary in the margins, and haftarot. The biblical text is written in a square Italian script in the Ashkenazic style, the translation column is written in a small square script in the Sephardic style, apparently by the same hand that copied Rashi’s commentary in a semi-cursive script of the Sephardic type, while the commentaries on the margins of the scrolls were written in a typical semi-cursive Ashkenazic script. The biblical text was written by the author of the colophon, who completed the copying of the Pentateuch in 1472, and who copied a manuscript in Florence in 1490. The highlighting suspended from the vocalisation marks appear in the book of Genesis.

Another example is MS Jerusalem Heb. 4° 1384, whose scribe and decorator has recently been identified as Joel ben Simon, the famous Ashkenazic scribe and illuminator, who was active from the middle of the 15th century, especially in Italy (see Beit-Arié, Makers, pp. 93-107, 216-248). Shlomo Zucker, who identified the scribe and illuminator of the manuscript, contested the reason for decorating the name אברם (on fol. 120r and twice on fol. 196v) as observed by Pasternak, but his arguments are unconvincing, mainly because of the occurrence of the unique highlighting of the same name in four more manuscripts from proximate locations at around the same time period (see S. Zucker, The Moskowitz Mahzor of Joel ben Simeon: Ashkenazi-Italian Scribe and Illuminator of Hebrew Manuscripts, Jerusalem 2005 , pp. 16-17 (in Hebrew). See Pasternak, Together and Apart, p. 235, n. 219.

This stratagem is documented not only in Italy, as indicated by MS Parma Parm. 3251, a manuscript containing dirges for the Ninth of Ab according to the Western Ashkenazic custom, which was written in the middle of the 14th century, apparently in Mainz), as indicated by the highlighting of this name when it occurs in the text (See Richler & Beit-Arié Catalogue [Parma], no. 1130). In addition to the highlighting of the name יהודה with a drawing of a head on fol. 64v (presumably disclosing the copyist’s name) fol. 34r contains a conspicuous marking of the vocalisation of the first letter of the name יוחנן which occurs there at the beginning of the line.

The following are two examples of the complex and multi-purpose, albeit not entirely elucidated, use of the stratagem. MS Jerusalem, Israel Museum 180/94 (formerly MS Sassoon 506) – a Tora (with Onkelos’ translation), the Five Scrolls and haftarot with Rashi’s commentary, and a second copying of the Tora in the bottom margins of the first copying – was written in Ashkenaz in 1344 by an anonymous scribe for Yosef ben Ephraim. In the core text one can discern highlighting of the names נתן (4 times) and דניאל (once), as well as ornamentation and the names of the owner and his father in red ink. Was the scribe’s name in fact Nathan el son of Dani’el? Furthermore, the Masoretic-vocaliser, who also added the second copying of the Tora in the lower margins, highlighted the name לו many times in the Masora and in the re-copying (see Manuscrits médiévaux III, 101*). Is this a case in which the use of the stratagem to highlight the name of the owner and that of his father, as well as an allusion to the name of the Masoretic-vocaliser are found in one manuscript? Another example, that provokes even more difficulties can be found in a manuscript of the commentary on the She’iltot of Rav Aḥai by
This stratagem for encrypting the name of the copyists does of course have tremendous codicological value, for it allows us to uncover the identities of anonymous copyists. Although this method usually only informs us of the first name of the anonymous scribes, it allows us to compare his copying, with all its attendant graphic and physical components, to dated and localised copyings of scribes bearing the same name. This then enables us to arrive at a full identification of the copyist, and when this name is an uncommon one, the comparative task becomes, obviously, much simpler. However, the most sophisticated application of the stratagem pertains to multi-handed manuscripts, and this is of even greater importance to both palaeography and codicology.

As mentioned, almost 9 percent of dated medieval Hebrew manuscripts were written by several scribes who worked simultaneously, and it may be that among the tens of thousands of undated manuscripts the proportion of multi-handed copies is even greater. The number of scribes who collaborated in such copying ranged from two to seven. The ability to distinguish between the different hands that participated in the copying is crucial not only for their full codicological and palaeographical description and not only for informing us about the modes of production and distribution of books in Jewish studies, but also for text criticism. The copyists in such collaborative copyings were likely to have used different text-models, and even if they all copied from a single source, each one was likely to have been influenced by particular orthographic practices, pronunciations, associations, literary reminiscences, as well as his particular educational background and style in the complex process of transmission from the source text to the copy of the text inclusive of its physiological, mental, visual, and phonetic components. Distinguishing hands is rendered difficult by the stereotypical nature of the script types in each mode (square, semi-cursive, and cursive) and region, a difficulty compounded by the dynamic variations in the writing of each individual copyist. For this reason it is necessary to consider personal

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Johanan ben Reuben, which was copied by Menahem ben David in Byzantium for his own use in 1458 (MS Berlin Or. 8° 333, Steinschneider Catalogue 165). In this manuscript the copyist’s name was highlighted by ornamenting his name both in the text and in acrostic form twenty-six times (!), although it also contains highlightings of the names יוחנן (fol. 94v) והoccan (fol. 143v) and בַּטֶּל מַה (fol. 268r, 271v, 272v, 275r). The highlighting of the name והoccan may allude to the name of the author, although we have no similar example of this application of the stratagem. The last name may merely indicate a blessing formula.

110 See below, chapter 10, in the section on the ‘homogeneous codex’.

111 See in detail below, chapter 13, in the section on ‘Personal production and its impact on the transmission’.
para-scriptural elements that accompany the writing in order to separate the various hands.\textsuperscript{112}

The scribal trick used for disclosing the copyist’s name provides an extremely useful aide when dealing with multi-handed copies, and when it is uncertain whether a certain manuscript is uniform or multi-handed, because we do in fact tend to find a stronger tendency to employ this trick in copies that were produced by several scribes, and, understandably, the highlighting of the names of the copyists help us to locate and isolate the hands, and confirm that they are indeed separate. Manuscripts that are both multi-handed and colophoned reveal that they usually were inscribed with only one colophon, and this by one of the scribes who makes no mention at all of his co-copyists’, and what’s more, at times the author of the colophon copied only a small portion of the book. It is clear that such scribes were hired to copy the book due to their prestige, or had initiated the copy for their personal use, but, presumably, had been assisted in the actual copying by relatives or students; hired scribes may have used apprentices, although we possess no evidence of such copying workshops or centres. Such assistant copyists, of whom no trace exists in the colophon of the chief scribe, could have insinuated their names by using the highlighting trick. Indeed, they often did so, as the following examples demonstrate.

Almost all of the few cases in which co-copyists were explicitly mentioned in the colophon of the main scribe appear in books copied jointly by members of one family. This is the case in Rashi’s commentary on the Tora, MS Parma, Parm. 2886 (De-Rossi Catalogue 333), which was written in Italy in 1392 by two brothers, Nathan and Avraham sons of Avigdor, as stated in the colophon. Indeed, each of them highlighted his own name in his segment of the copying.\textsuperscript{113} The famous manuscript of two illuminated volumes of the assembled commentaries on the Bible, by Rashi and other commentaries, MS Munich, BSB Cod. Hebr. 5, was written, according to the colophon at its end, for Yosef ben Shelomo in 1232/3 by Shelomo ben Shemu’el of Würzburg, who did indeed decorate his name as it occurred in the text. The scribe Shelomo did not note in the colophon that another scribe had assisted his copyings,

\textsuperscript{112} See below, chapter 10, in the section on ‘Distinguishing between hands that shared in the copying of the text in one codex’.

\textsuperscript{113} אני אברהם תנוו"י בכאמ"ר אביגדור ישר"ו השלמתי זה הפירוש חומש לרבינו שלמה ע"ה מאור הגולה. ואמת כי.Blackout. The famous manuscript of two illuminated volumes of the assembled commentaries on the Bible, by Rashi and other commentaries, MS Munich, BSB Cod. Hebr. 5, was written, according to the colophon at its end, for Yosef ben Shelomo in 1232/3 by Shelomo ben Shemu’el of Würzburg, who did indeed decorate his name as it occurred in the text. The scribe Shelomo did not note in the colophon that another scribe had assisted his copyings,
Examination of the individual and stable graphic elements accompanying the stereotyped script and its nuances, such as the stratagems for maintaining the left margin line, the graphic filling, and the substitutes for the Tetragrammaton, clearly reveals that another hand, in a script quite similar to that of the scribe Shelomo, participated in the copying. This hand is responsible for fifteen complete quires and shared with the main scribe in the copying of another fourth. Indeed, within the segments copied by the assistant scribe the name שמואל was decorated and highlighted whenever it occurred in the text at the beginning of a line, a total of sixteen times! Thus did the assistant scribe, a skilled copyist whose calligraphic abilities did not fall short of those of the main scribe, compensate for the omission of his name and his contribution in the colophon: he stole it in again and again in an apparently clandestine form, but one most likely widely recognized by his milieu. One ought to assume that the secondary scribe would not have permitted himself to use the trick in defiance of the main scribe, who, as noted, also employed it. Since the phenomenon is common to many multi-handed manuscripts from the regions of Ashkenaz, Italy, and Byzantium, it may have been customary among copyists who produced books with the help of other copyists: the main copyist, the professional scribe, the one who accepted a commission, or initiated a copy for himself, usually did not mention that he had availed himself of others’ craft but allowed his assistants to indicate their own names through the copied text.

MS New York, L 827 illustrates the phenomenon of manuscripts copied for personal use. According to the colophon, the manuscript was copied by Yehuda ben Namer of Manisa [Magnesia], Turkey, in 1387, for his own use. However, he actually copied only its ending (fols. 370r-392v)! The great majority of it was copied by another scribe, who revealed his identity by highlighting the acrostic מִשְׁה (‘Moses’), with the first incidence occurring on the very first page of the manuscript. One may

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114 In fols. 1v, 15r, 38r (twice), 92v (twice), 200v. The scribe who only copied the end of the manuscript and the colophon highlighted his name when it appeared in the last line on fol. 372v.
speculate that Yehuda ben Namer hired Moshe to copy Ibn Ezra’s commentary on the
and the Book of Psalms with Rashi’s commentary, both of which were copied in the
middle of the fourteenth century by Binyamin the Scribe (בנימין הלבלר), the copyist
who inscribed his name in an abbreviated undated colophon. Clearly, this Binyamin
had copied a large portion of the body text of the mahzor and its commentary (he
highlighted his name three times). However, it is also clear that two others hands had
copied significant portions of the manuscript: the first, which copied the commentary
in the margins from fol. 131v until the end of the manuscript, highlighted the name
שמואל five times, and the second, which copied the body text from fol. 214r to fol.
333v, highlighted the name עיבד four times. Moreover, this manuscript also appears
to encrypt the names of person who commissioned the copy and of his son: in the
segments copied by Binyamin – the only copyist who explicitly indicated his name in
the colophon and who was undoubtedly the main scribe responsible for the copyings –
lines of the commentary were written so as to display in large letters (in the manner
occasionally used by the Masoretes, when copying the Masora) the names חננ אל בן
יצחק (in the opening of fols. 10v^11r) and ייצחק בן חננאל (fol. 95r). The copyist used
the same technique once more to disclose his own name, on fol. 94r.

We will conclude this series of illustrations with one more manuscript from
Ashkenaz. This region displays the highest rate of multi-handeded copies, and it is no
wonder that the prevalence of the stratagem was greater there. MS Jerusalem Heb. 8°
4012 is the copy of a mahzor in the Western Ashkenazic liturgical tradition for the
special Sabbaths (the four Sabbaths preceding Passover), Passover and Pentecost,
which presumably was written in the middle of the fourteenth century. No colophon
has survived in the manuscripts, and we therefore know nothing about the identity of
the copyist. A careful examination of the volume reveals that the manuscript is the
product of three hands, each with its own characteristics, whether codicological (such
as the pricking pattern used for the ruling and the architectural form of the ruling
emphasized by the use of pencil) or para-scriptural. And indeed, it turns out that
within the respective segments of the copying associated with each hand a different
name is decorated at the beginning of the lines: חיים who wrote fols. 1v-143v and

\[115\] It should be noted that the name עיבד was also highlighted in the section copied by Binyamin, or
this may have been the scribe who vocalised the manuscript and participated in the copying, and
therefore, because the manuscript lacked a Masora, permitted himself to insert his name also in the part
he vocalised but did not copy.
disclosed his name on fol. r; יעקב who wrote fols 144r-241r and insinuated his name into page 200r; יהודה who wrote fols. 241r-253r and revealed his name on fol. 241r.

The scribes’ custom of highlighting their own names by means of the words or letters of the transcribed text was probably born as an amusement or sprang from a proud urge, and therefore the sharp condemnation of this practice by Sefer Hasidim is unsurprising. We have already seen that many scribes copying for their own use as well as hired scribes employed this trick even when they had explicitly written down their names in the colophon, and therefore, in such cases, the custom was of little practical use. But we have also established that the trick was used in anonymous copies and especially in multi-handed manuscripts. In such cases, the trick provided a veiled means to disclose the names of copyists, and particularly those of the assistant copyists, who were not acknowledged in the colophon by the main scribe in charge of the production. The custom of highlighting the name allows us not only to learn the first (and sometimes full) name of the anonymous copyists, but also to distinguish between the hands that participated in the copying. These hands were likely to have used different source texts and to reflect different linguistic and scholarly traditions, which must be differentiated when dealing with the text of the copying. Even the mere discovery of the first name of the anonymous copyists may be of value: it could lead to the identification of his full name by comparing his writing and the codicological characteristics of his copying to those gleaned from dated (and perhaps localised) manuscripts written by copyists with an identical name, as has transpired on more than one occasion.

116 A jesting and ironical illustration of the pridefulness and playfulness involved in the use of highlighting can be seen in the copyings of Moshe ben Yehoshua’s Merkes, a hired scribe hailing from Germany who was active in Italy in the late 15th century. This scribe used to decorate his name, when it occurred in the text, with a crown. In MS Paris Hébreu 402, we find the verse רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה הַשָּׁרָה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס הַמְּפִסְמְת הַכַּרְסֵה רֵדֶס Harkavy 21:31 marked in a minute script in the margins, ostensibly by one of the users of the manuscript, but clearly written by the scribe himself, whose jesting nature is apparent in his colophons (See Manuscrits médiévaux, I, 134, and in the Plates volume, and the addenda in Part III, p. xxvii). An identical rhyme in which he inserted his name explicitly appears in MS London Harley 150 (Margoliouth Catalogue 189), and in MS London, Harley Or. 340 (Margoliouth Catalogue 869).

Recently Simcha Emmanuel has noticed in a collection of the responsa of Rabbi Meir of Rothenburg, which was copied by three scribes in Ashkenaz in 1391 (the manuscript was formerly kept in the Beth Din and Beth Hamidrash Library in London and was purchased in 1999 by the Jewish Museum in Berlin) an unknown elaboration of the copyists’ stratagem: one of the copyists did not confine himself to ornamenting his name, his father’s name, or the name of the person who commissioned the copy, but even interpolated blessing formulae after the occurrences of these names in the body text. See S. Emmanuel ‘He’ara ’al tekhiqnut nedira shel ma’atiqim’, Quntres: An Online Journal for the History, Culture and Art of the Jewish Book, 2/1 (2011). https://taljournal.jtsa.edu/index.php/quntres, pp. 59–61.
It is quite possible that the apparent birth of this phenomenon in Ashkenaz is no mere coincidence, and in any event its spread in that zone was both rapid and largest in scope. Among the dated multi-handeded copies, the Ashkenazic manuscripts are the earliest and the most frequent (the Byzantine manuscripts slightly more common).\textsuperscript{117} This may indeed indicate that the spread of the custom was intertwined with the individual-collective production of the manuscripts, in which it was customary only for the main scribe to leave a mark on the colophon. Therefore it is not surprising that in the Oriental zones, in which the proportion of multi-handeded copies was the lowest, the use of the stratagem did not spread. If so, it may not have been mere pride that gave birth to the stratagem, but on the contrary, the willingness of the main scribe to acknowledge his collaborators and allow them to immortalize their contribution in this humble manner. However, the stratagem was quickly adopted by all copyists, and they implemented it even when their own names were properly highlighted in the colophon appended to the manuscript.

\textbf{2. Destination of copying}

The indication of the name of the person who commissioned the copy most certainly contributes to our knowledge and understanding of the social and economic background of the production and consumption of books in the middle Ages. Knowing whether a manuscript was commissioned and therefore copied by a hired, professional, or casual scribe or whether it was destined for self-use is of utmost importance not only for the history of the production of the Hebrew book but for the study of Jewish literacy, text criticism, and for elucidating the paths of Hebrew text transmission and their nature.\textsuperscript{118} Generally, one can assume that hired scribes attempted to be more faithful to the source text of their copying, and yet were more vulnerable to the unconscious blunders arising from the complex psychological and physiological features of the copying mechanism. Unlike these, the copying of scholars or literati who copied for self use was more controlled and therefore more immune to the corruptions of texts due to the mishaps of the copying mechanism. And yet, colophons of self-produced copies attest to the fact that self-producers did not regard their copying as mechanical duplication, but rather as a critical enterprise that

\textsuperscript{117} The following are the rates of multi-handed manuscripts among the documented dated manuscripts documented until 1500: 14 percent in Byzantium, 12 percent in Ashkenaz, 9 percent in Sefarad, 8 percent in Italy, and 6 percent in the Orient (including Yemen).

\textsuperscript{118} For data on the distribution of the destinations of the manuscript copyings, see above, chapter 1, section 5, tables 11-13.
involved proofing, correcting, and emending the text based on knowledge, conjecture, the conflation of versions from other sources, and even the interpolation of materials extraneous to the source text.\textsuperscript{119} These literate scribes’ unhesitating intervention in the copied text renders void the advantages of scrupulous copying as well as immunity from its perils. While there might be some chance of purifying the inadvertent corruptions of the text at the hand of professional scribes, it is doubtful whether texts that have been enhanced by scholars can be restored.

Nevertheless, one cannot ignore the social-economic aspects entailed by the destination of a produced book. It can be assumed that those who copied for themselves chose the mode of self-production not only because they wished to produce a supervised and improved text version. The motive for self-copying may have been merely monetary. Self-copying was of course much cheaper, and the major part of the investment was the writing material, which became much less expensive with the spread of paper manufacturing.

3. Dating systems
Hebrew copyists generally noted the date of completion of the copy in precise detail.\textsuperscript{120} Not only was the year noted, but frequently also the month and the day in it, as well as the of the week. Moreover, some one hundred colophons detail in which part of the solar day the copying was completed, particularly when this was at night. In any event, manuscripts were copied at all hours of the 24-hour solar day, and this fact also accentuates the individualistic nature of Hebrew book production. The day of the month was indicated in 71 percent of the dated colophons (70% of the colophons in Ashkenaz, 71% in Spain, 73% in Italy, 81% in Byzantium, 64% in the Orient, and 62% in Yemen), and the day of the week is noted in half of them.\textsuperscript{121}

Dates are presented according to four eras: the Era according to the Creation; the Era of the Contracts (\textit{minyan shetarot}), corresponding to the Seleucid era, which began in 312 B.C., the Era calculated according to the destruction of the second Temple in Jerusalem, and the Islamic Hijra Era. The Seleucid Era and the Hijra Era were used only in the Orient. The eras from the Creation and the destruction of the Temple are

\textsuperscript{119} See in detail, below, chapter 13.

\textsuperscript{120} For a discussion of dates and eras, see Zunz, \textit{Zur Geschichte}, pp. 214-230.

\textsuperscript{121} These data include indications of the weekly Tora reading portion), which are merely an alternative form of indicating the day of the week and month. Appearing in only 6 percent of the colophons, this custom was prevalent in Ashkenaz (17%) and was known in Sefarad and in Italy (more than a third of the occurrences in Italy are in colophons by immigrant scribes, especially from Ashkenaz).
the only Jewish dating systems. In scores of manuscripts – mostly written in the Middle East and a minority in Italy – the date was noted according to two or even three commonly used calendar eras, and in rare and exotic examples from the East, the scribes amused themselves by noting five or even seven parallel eras, some of them were never in widespread use but were based rather on calculations derived from the traditional chronology.

The Era according to the Creation
The Era according to the Creation, which is still in use today, was the dating system most commonly used by Jewish scribes, generally. It was used in all periods and zones, but in the Middle East and especially in Yemen it was never the preferred calendar era. It served as the standard dating system only in the European zones – in the regions of Sefardic book culture and its offshoots, in Ashkenaz (northern France, Germany, and neighbouring countries), in Italy, and Byzantium. The sparse use of other calendar eras in Europe of the Era from the Destruction of the Second Temple in two dozen colophons in Italy (already in the earliest colophon, and at a relatively higher rate until the end of the thirteenth century) and in a few Byzantine manuscripts (among which the Seleucid Era also appears) – never appears on its own, but is always secondary to the basic dating according to the Era of Creation. In the Middle East this era was used in around one third of the colophons, in some alongside other eras, and in Yemen it was only seldom used (only in 5% of the colophons).

This era, like others, was indicated by several terms and formulae: לבריאת העולם (with different spellings in early colophons, e.g. לבריהת עולם, לבריהת עולם, לברית עולם, לבריהת עלו...
When the notation of the millennium was omitted, this was indicated with the term לפרט, or לפרט קטן, although the term לפרט was also used to indicate the Era of Creation even if the millennium was not omitted.

The difference between the Jewish dating according to the era of Creation and the Christian Era is 3760. Calculating the date according to the Era of Creation for the purpose of juxtaposing it with the Christian era, which was the common civic dating system, could be performed simply by adding 1240 to a date in the fifth millennium or 240 to a date in the fourth millennium. However, the Hebrew calendar is based on the lunar cycle with the addition of intercalated months, while the Christian calendar is based on the solar cycle, and therefore the beginning of the Hebrew year does not coincide with the parallel Christian years. The months of Tishrei-Kislev, as well as the first days of Teveth are always parallel to the Christian year previous to that calculated according to the aforementioned formula, while any date after the 12th of Shevat is always parallel to the Christian year. In other words, it is impossible to know whether a date occurring in the narrow margin between the 9th of Teveth and the 11th of Shevat falls on the parallel Christian year, according to the aforementioned calculation, or whether it falls on the previous Christian year. See A.A 'Aqavya and N. Fried, Calendar for 6,000 Years, Jerusalem 1975/6, p. 33 (in Hebrew).
(according to the same calculation). To establish such a dating it is necessary to consult synchronic chronological calendars.\textsuperscript{129}

\textbf{a. The Seleucid Era}

The Seleucid Era (Era of the Contracts) was usually designated by the term לשטרות or not all, similar to the style for recordings dates according to the other eras. In a few early Oriental manuscripts the date is noted as למלכות יונים.\textsuperscript{130} In two dozen colophons from the late eleventh century\textsuperscript{131} and until the end of the Middle Ages, it was designated as לטרぬי (according the calendar of the Greeks) or sometimes לטרנן. Nearly all of these colophons are by Karaite copyists and written in Arabic. From the fourteenth century some used the Aramaic form לטרניר and especially in Yemen, where the scribes were fond of using Aramaic in colophons. The Seleucid era was used only in the Middle East,\textsuperscript{133} where it was the standard dating system. It appears in 63 percent of the colophons from outside Yemen. In Yemen – where the Jews continued to use it until the mass immigrations to Palestine, some in 1882 (continuing to use this system) and the remainder until they immigrated to the State of Israel after its establishment – this system was almost exclusively used (98%).

\textsuperscript{129} The most lucid tables are given in E. Mahler’s \textit{Handbuch der jüdischen Chronologie}, Leipzig 1916. See also ‘Aqavya and Fried, (above, n. 128). Mahler is extremely useful not only for converting dates, but also for checking Hebrew dates, e.g. if the day of the months matches the day of the week mentioned in the colophon; what was the date noted in the colophon according to the weekly Tora reading portion (or the counting of the ‘omer, or relative to a holiday) in that particular year. The advantage of Aqavya and Fried’s tables is their presentation of tables comparing not only the Christian calendar, but also the other dating systems. However, several internet sites for converting and comparing dates of Hebrew and Christian calendars are now available.

\textsuperscript{130} See \textit{Codices hebraicis}, Part I, ms. 5, 16, 17.

\textsuperscript{131} See \textit{Codices hebraicis}, Part III, ms. 47.

\textsuperscript{132} In the colophon of MS St. Petersbg Eap. II B 39, written in Jerusalem in 988/9, the designation is למלכות יונים (See \textit{Codices hebraicis}, Part I, ms. 12). In the “Leningrad Codex” of the Bible it is למלכות יונים (See \textit{ibid.} ms. 17), and similarly in the multi-era Oriental colophon cited in full (above, n. 123), it is למלכות יונים. In MS New York MS 2367, written in Italy, the designation is לטרנה and in the Karaite manuscript inscribed in 1399 it is לטרנה (See \textit{Manuscrits médiévaux}, I, 70). In a manuscript written in Crimea (Feodosiya, the Crimean Peninsula) in 1368 it is לטרנה (MS Leiden, University Or. 4769), and similarly in the Arabic form, in a manuscript written in Mosul (Aleppo) in 1472, it is לטרנה (See \textit{Manuscrits médiévaux}, III, 14). The Era of Contracts was the standard era used in Syriac manuscripts, with formulations similar to those of the Hebrew colophons: in the 6th century the era was named after Alexander, but sometimes like in Hebrew - למלכות יונים – this eventually becoming the standard formulation. See S.P. Brock, ‘The Art of the Scribe’, in \textit{The Hidden Pearl}, ed. S.P. Brock, vol. 2, Rome 2001, p. 254.

\textsuperscript{133} Outside of the Orient only seven dated manuscripts have been found whose owners used the Era of the Contracts; five of them were written in Byzantium (two by a scribe מארץ יוון, perhaps in North Africa), one in North Africa, and one in Italy; and in three of them it appears as an addition, in parallel to other eras.
The Era of Contracts is not a Jewish dating system, but is rather the Seleucid system that was established throughout the Middle East in 312 A.D. after the conquest of Babylon by Seleucus I, Nicator (hence its designation למלכות יונים – the era of the ‘Greek kingdom’). It was used by Jews during the Hellenistic and Roman eras, as evidenced by the Book of Maccabees. In Jewish sources it was harmonised to the Hebrew calendar and began to appear in sources available to us from the Geonic period, and in colophons from the very earliest extant manuscripts from the Orient. The dates noted according to this era and according to the Era from the Destruction of the Second Temple cannot be calculated according to the civic/Christian? calendar, nor even by means of the traditional chronology, whose beginnings are a subject of controversy. Our own calculations cannot be premised on either of these systems but rather on the practical tradition of the colophons’ authors. These traditions become apparent thanks to the colophons that register dates in parallel systems, and especially using the Era from the Creation, the dating of which is undisputed. The colophons using double (or several parallel) dating systems teach us that the Seleucid era is usually calculated according to the system whereby its first year is ג'ת”ן (3450) to the creation, in other words 312 C.E. (Therefore one must subtract 311 – and at the beginning of the year, 312 – from the designated year in order to calculate the parallel civic/Christian? year).134

b. The Era from the Destruction of the Second Temple

The Era from the Destruction of the Second Temple is usually designated with the omission of the word שנון (‘Second’) or with the abbreviation להורוב (‘to the destruction’), and in early Oriental manuscripts also with words להורוב בית המקדש (‘to the destruction of the Second Temple’)135 and לחרבן בית הבחירה.136 In most of the Italian manuscripts the designation is להורוב בית הקדש accompanied by the wish formula יבנה במהרה בימינו (usually also followed by ען אמן). Of the four eras, the

134 See also Aqavya and Fried (above, n. 128), pp. 649-650. According to the tradition of the Syriac scribes, who used this era as the standard reckoning since the 6th century, the era began in October 311, and see Brock (above, n. 132), ibid. The uses in the Book of Maccabees are inconsistent – some of them attest that the era began in Nissan, and one of them – in Tishrei. According to Greek sources, the era began in the autumn of 312 BCE, and according to the Babylonian Era of Contracts – in the spring of 311. See E. Schürer, The History of the Jewish People in the Age of Jesus Christ (175 B.C.–A.D. 135), a new English version revised and edited by G. Vermes & F. Millar, vol. 1, Edinburgh 1973, p. 126. In any case, the practical use in Jewish colophons does not attest that the era began in any month other than Tishrei.

135 Codices hebraicis, Part I, ms. 8, Part II, ms. 32.

136 Codices hebraicis, Part III, ms. 48. In a few late Oriental manuscripts: בית אלהינו (see e.g. Manuscrits médiévaux, III, 14.)
use of this calendar era is the rarest, and it appears in only 2 percent of all colophons. Its greatest distribution was in the Orient where it appears in 6 percent of manuscripts. Outside of the Orient its appearance is conspicuous in Italian colophons from the mid-thirteenth century, although the number of examples is very small (only two dozen or so). Both in the Orient and in Italy, the use of the Era to the Destruction was secondary and served as an addition to the Era from the Creation. This was also the case in Italy in all periods and in the Orient, except for its use in four early manuscripts, whose scribes noted the date using only the Era to the Destruction. When it comes to calculating the Era of the Destruction of the Second Temple, whose historical date is 70 C.E., the colophons employing a double dating system demonstrate, contra the opinions of the Geonim, Maimonides, Rashi, and others, that in practice it was usually calculated (not only in the Orient but also in Italy) by counting the year 3829 (ג’תתכ”ט) to the Creation as the 1st year to the Destruction of the Temple. Therefore 68 (and at the beginning of the year 67) years must be added to the year designated according to the era in order to arrive at the parallel civic/Christian date.

c. The Muslim era

The Muslim era was commonly used in the Oriental Muslim countries, where it is found in more than a quarter of the colophons, with the exception of Yemen. In

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137 In Italian manuscripts this secondary character is underscored by the word אשה which serves as a copula connecting the Era to the Creation with the Era to the Destruction.
138 Codices hebraicis, Part I, mss. 1, 4, 9; Part II, ms. 32.
139 Indeed, one of the early doubly dated colophons attests to a tradition that calculated the first year to the Destruction of the Temple as 3830 (ג’תת”ל) (see Codices hebraicis, Part I, ms. 8), and see further in the next note.
140 Presumably, according to this tradition, the Temple was destroyed on the Ninth of Ab 3829 (ג’תתכ”ט), as Maimonides calculated, but contrary to his view, that entire year was calculated as year 1 to the destruction, and not from the month of Ab to the month of Ab in the following year. In this respect the practice conforms with the system of Rashi, who held that the reckoning began from the month of Tishrei that preceded the destruction (however, according to his system the destruction occurred in 3830 (ג’תת”ל). For the traditions and interpretations concerning the beginning of the Era of the Destruction and scholarly views about the calculation of the date, see. H.Y. Bornstein, ‘Ta’arikhei Yisra’el’, HaTequfa, 8 (1919/20), pp. 321-338 (in Hebrew). Cf. Aqavya, Sidrei zemanim le-fi hamassoret (above, n. 125), pp. 313-314 (in Hebrew).
141 Apart from four manuscripts: two from Sephardic regions, and two unusual manuscripts from Yemen. One is by the prolific scribe Sa’adia ben David, who at a later date added the Yemenite moniker ‘The-Adani’ to his name, after migrating from Yemen to Syria and then to Palestine. There he also was renown as an author, and between 1465 and 1485 wrote some twenty manuscripts, half of which were autographed works. In the colophon of the single manuscript that has survived from his period of activity in Yemen, which he copied in Aden in 1451 in a characteristic Yemenite script (his script thereafter was an idiosyncratic mix of Yemenite and Oriental writing), he noted the year employing four eras – to the Creation, the Era of Contracts, the Arabic Era (לאלערבי) and the Persian solar era (לאלפרסי שימשי)! See MS Oxford MS. Hunt. 129 (Neubauer Catalogue 1521, and the relevant entry in
more than half of these colophons the Muslim era accompanies the Seleucid era or another era. Almost 90 percent of its appearances are in Judaeo-Arabic manuscripts, and most of them are Karaite. The early designation of the Muslim era, which was also preserved in later periods was למלכות כהן זעירה (and once לחסם חסף טינה 142).

From the middle of the thirteenth century and especially from the fourteenth century onwards we find the form לקרן זעירה (or in the vowel-deficient orthography זערה). 144

This formulation is used by Karaite copyists, and it appears in almost one third of the manuscripts that use the Muslim calendar era. The term למלכות כהן / לקרן זעירה was coined based on Daniel 7:8 (קרן אחרת זעירה), according to a homiletic interpretation in Judaeo-Arabic of Daniel’s utterance – attributed to Sa’adiah Ga’on – as referring to the reign of the Muslims. 145 A similar proportion of copyists – around a third – used the term לישמעאל (‘to Ishmael’) and the others simply used the date without designating the era.

These colophons also used the Muslim calendrical months, and according to Arabic style (sometimes also appearing in Biblical Hebrew), the numbers of the years were noted in reverse arithmetical order, i.e. the single position precedes the tens, and the tens position precedes the hundreds. The final letters מפם in מפם represent the hundreds that are higher than 400 (the highest number represented in Hebrew by a single, non-

the Neubauer & Beit-Arié Catalogue). On this copyist-scribe see also B. Richler, ‘Al “midrash habe’ur” haTeimani u-mehabro’, Alei Sefer, 2, (1975/6), pp. 91-96 (in Hebrew). The other Yemenite colophon is included in MS London Or. 2348 (Margaliouth Catalogue 89), and was written in 1469, probably in San’a. Its author is anonymous, but most probably should be identified with the most exalted scribe in Yemen, Benaya ben Sa’adaw, the progenitor of the famous scribal family that numbered four generations. On Benaya and his descendants see M. Beit-Arié, ‘A Colophon-Poem in Yemenite Pentateuch Manuscripts’, in Papers on Medieval Hebrew Literature Presented to A. M. Habermann on the occasion of his 75th birthday, ed. Z. Malachi, Jerusalem 1977, pp. 37-50 (in Hebrew). Cf. Manuscrits médiévaux, III, 112*. What makes this colophon, which was written in Arabic, unique was the fact that it was written in an Arabic script, even though the manuscript is a biblical one. Naturally, the only date used in the colophon also follows Arab custom. The names of the person who commissioned the copying and of his forefathers were of course noted in their Arabic forms, but it is inconceivable that the owner was a Muslim, because he was designated as the “Israelite” (הלשנאותלי). As noted, the era according to the Muslim calendar also appears in two manuscripts from Sefardic regions – one is a Judaeo-Arabic manuscript written in Spain in 1375 (MS Vatican, Vat., ebr. 426, fols. 102-176), and the other is a manuscript devoted to the calendar and astronomy, which contains, at the end of two Hebrew works on the astrolabe, colophons written in 1482 Siracusa, Sicily (MS Vatican Vat. ebr. 379, fol. 41r and fol. 50r). Each of the colophons notes the Hebrew, Christian, and Muslim date.

142 See e.g. Codices hebraicis, Part I, ms. 17 from 1008, ms. 33 from 1048, MS St. Petersburg Eap.-Apaβ. 2, 679, from 1156.
143 In a fragment of a colophoned Karaite manuscript in Arabic, MS St. Petersburg Eap.-Apaβ. I 831, (Codices hebraicis, Part II, ms. 31). On the source of this formulation and its meaning, see ibid. n.1.
144 The formulation לקרן זעירה is followed in most colophons (already in MS St. Petersburg from 1156, which uses the formula למלכות כהן) by the curse זעירה שלמה on the last line of the colophon.
145 See Steinschneider, Vorlesungen, p. 55, which is based on Harkavy & Strack Catalogue, p. 265 (Codices hebraicis, Part I, ms. 17, n.9; Part II, ms. 33, n. 1).

Because the Muslim calendar is based on the lunar cycle without an intercalated month, there is no fixed formula allowing a comparison to the Hebrew or Christian calendar, and therefore for the determination of every date it is necessary to consult synchronic tables.

d. The Christian era

Because the Christian era had theological connotations (see below), it is no wonder that Jewish copyists in Europe did not use this dating system, unlike their brethren in the Middle East, especially the Karaites, who did not hesitate to use the Muslim era, presumably because this historical era, which commenced with the Hijra – Mohammed’s emigration from Mecca to Medina – was not overlaid with theological meanings or perhaps any meaning whatsoever, or perhaps because of the Jew’s very different attitudes toward Christianity as opposed to Islam. The only colophons that nevertheless include the Christian era are astronomical manuscripts and one containing calendrical tables, the content dictating the need to include the Christian calendar. That said, there are a number of Hebrew manuscripts whose dates of completion were noted only according to the Christian era, but they were not written by Jews but rather by Christians, nearly all of them converts. The most outstanding example of this are the many manuscripts – at least twenty, and at least eighteen dated ones – written by Alfonso (Alonso, Alonzo) de Zamora in post-expulsion Spain, especially at the University of Alcala de Henares, nearly all between 1516 and 1537. This scholarly convert, who undoubtedly was a professional copyist before converting to Christianity, produced manuscripts in a Sefardic calligraphic script to which he applied all of the scribal customs of the Hebrew copyists, using the standard formulae in the colophon or manuscript ending, except for the indication of the date, which by mentioning the birth or the coming of the Messiah, of Jesus, or of the Redemption reveals the fact of his conversion (לילות מוסף ויושע מושיע, לבאת מולך מלך המשיח).

One example from a colophon of the Book of Exodus with a Latin translation (MS Madrid, Universitad Valla-Avnil 12), which he wrote in 1528 at Alcala de Henares University, in order to make it available to students at the university library, reads:

146 One example from a colophon of the Book of Exodus with a Latin translation (MS Madrid, Universitad Valla-Avnil 12), which he wrote in 1528 at Alcala de Henares University, in order to make it available to students at the university library, reads: נכתב הספר הזה בכאן במתא אלכלה די אינאריש לתח ומכב תסר הזה רבש במאית אינארל די אינאריש לתח גואל מלך משיח, לוいただいた מושיענו יהושע משיח, למנין ישועתנו על יד אלונשו די סאמרה, וזה שחרבר הדפסים דקוקן לשו עירית.
Unusual also are three manuscripts copied in Italy in the beginning of the sixteenth century by Hebrew copyists, one of them a well-known author, on behalf of the Humanist and Hebraist Egidio da Viterbo, head of the Augustinian Order who later was appointed a Cardinal in Rome, among the foremost of Christian ‘Kabbalists’, who was described as spending a great deal of money to obtain a collection of Jewish books. In the colophons of these manuscripts the copyists added the date according to the ‘Christian era’, out of respect for the lofty personage, who was deeply interested in Hebrew language and literature and especially in Kabbala.¹⁴⁷

Despite the understandable aversion to using the Christian calendar era, the Jews of Italy were not averse to combining the Jewish year according to the Era of Creation with the day and month calculated according to the Christian Era, and presumably, this usage, to which they were accustomed in their everyday dealings with their Christian environment, was devoid of religious connotations. More than one hundred colophons from 1353 and later included the day of the month and the month’s Italian name: e.g. 24 January, 131 or February 5, 131. Combined forms included not only such hybrid usages – the day of the month and the Christian month together with the Hebrew year, as in these two early examples – but also the use of juxtaposed parallel forms, e.g. The Third Day (‘Tuesday’), 26 of Elul, 143 and 25 August, in the sixth millennium.

4. Indication of locality

Colophons whose scribes took the trouble to indicate the locality in which the copying was made provide vital information for the typology of Hebrew codicology, and of course, for historical research. Sometimes the copyist indicated not only the location in which the book was produced, but also the town of origin and current residence of...
the owner, as in a manuscript copied in a Sefardic script in Ancona in 1402, by a hired scribe who came from Perpignan on behalf of an owner from Rome, who resided at that time in Casa.¹⁵¹ As mentioned in chapter 1, section 3, 43 percent of dated colophons include an explicit indication of locality, and the localities of 6 percent of date colophons may be estimated with a great degree of probability. The rates of indications of locality in dated colophons are not uniform for all zones. Presented below are the percentages representing the distribution of the provenances. Because these statistics also include localisations that were not explicitly indicated in a colophon, but were rather estimated based on indications of locality by the same copyist at proximate dates, or based on solid historical information, etc., the figures representing only explicit localisations are given in parentheses. These data pertain to dated manuscripts before 1500 that have been documented: from the various zones of Sefardic culture (including North Africa, Provence and Languedoc, Sicily) – 52% (49%); Italy – 58% (51%); Byzantium – 45% (36%); the Middle East (except for Yemen) – 47% (41%); Yemen – 60% (57%); Ashkenaz (Germany and France) – 22% (18%). The proportion of localised colophons from the Ashkenazic zone is therefore the smallest. The puzzling avoidance of indicating localities by the majority of Ashkenazic scribes makes it difficult to distinguish the codicological traits and the script style of the manuscripts produced in France and of those produced in Germany, or to substantiate such a likely distinction.

The names of the localities are usually given in Hebrew transliteration of the form commonly used by the Jews at the time of the colophon’s writing. Deciphering these transliterations requires not only familiarity with conventions of transliteration in each zone, but also knowledge of the place’s historical name.¹⁵² In Germany, often the ancient Latin name rather than the German name was transliterated, e.g. ורמיישא (Worms), named Wormesse in Latin, or מנהזא (Mainz), named Megenze in Latin. In Spain, even after the Christian reconquista, Arabic place names were usually used, and not their Spanish descendant forms, e.g. טוליטלה / טוליטלה (Toledo) – a precise transliteration of the Arabic name طليطلة, in itself a descendant of the Latin name Toletum, or אשביליה (Seville). The place name מרטה עליל (Marsala) in Sicily reflects a

¹⁵² See the pioneering article by Zunz on toponyms in Spain and in Provence in Hebrew sources: L. Zunz, ‘Ueber die in den hebräisch-jüdischen Schriften vorkommenden hispanischen Ortnamen’, Zeitschrift für Wissenschaft des Judenthums, 1/1 (1823), pp. 114–177. For additional, besides Zunz, sources for the identification of names, see Steinschneider, Vorlesungen, pp. 52-54.
precise transliteration of the Arabic name مرسى علي. In order to identify Italian names, for example, one must know that Italian Jews transliterated the consonant  ג (ge, gi) with two yods, and therefore Reggio (Emilia) was transliterated נריזיו (153) and similarly Sant’Angelo – סנט אנגיו (154).

In the Middle East, localities were sometimes indicated by means of Hebrew toponyms from the Bible, which were anachronistically ascribed by Jewish Biblical commentators to well known cities (and to countries such as Spain ['Sefarad'] and Germany ['Ashkenaz']). Thus נא אמון was used as the Hebrew name of Alexandria, appearing already in the Aramaic translation of this name in the Bible (Nahum 3:8), or נא אמון (1 Samuel 14: 47, etc.) as the name of Aleppo, (Jeremiah 47:4) to indicate Dumyat in Egypt, (Genesis 10:27), instead of San'a. Another method sometimes in use in Italy was a calque translation, such as כפרים לוי (probably Treviglio), שמח לב (Crevalcore), הר נאה (Belmonte).

The places in which manuscripts were produced range throughout all the regions in which there were Jewish communities, from Iran and Bukhara until Yemen, from North Africa to the Caucasians, from Al-Andalus to Flanders, from the Rhine Valley and (later) until Prague, Poland, Ukraine, and southern Russia. Scores of colophons indicate localities for which we have no other evidence of the existence of a Jewish

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153 Appearing already in the early colophon written there in 1396 (MS Oxford MS. Hunt. 300, Neubauer Catalogue 305), but immigrants from Spain and Sicily, who did not need to transliterate such a consonant in Spanish, transliterated an identical toponym in Calabria, at the southern tip of Italy (Reggio di Calabria) as ריגו (always with a diaritical point over the gimel).

154 Appearing already in 1326 (in MS New York MS 2699a – a colophon on a single folio that survived from a manuscript).

155 See Codices hebraicis, Part III, ms. 54, written in אסכנדריא (alrxandria) in 1122. See ibid., on another manuscript by the same scribe, written in נא אמון in 1141. And cf., ibid., Part IV, ms. 99, from 1199.

156 Already in documents from the early 11th century.

157 See Codices hebraicis, Part III, ms. 69; Part IV, ms. 77, and in many documents.

158 See Beit-Arié, 'A Colophon-Poem' (above, n. 141), pp. 43-46.

159 In a cryptic colophon from 1358 in MS Oxford MS. Can. Or. 33 (Neubauer Catalogue 317, and cf. the same entry in the Neubauer & Beit-Arié Catalogue).

160 For the first time in 1428 in MS Oxford MS. Opp. 598 (Neubauer Catalogue 1260). The plain meaning of the Italian name is actually the opposite (a sorrowful heart, a heavy heart), but the Hebrew translation was either euphemistic or preserved a 200 year old tradition, when the town adjacent to Bologna had been called for a brief period Allegralcore, i.e. happy heart (personal communication by Mauro Perani).

161 A colophon from 1448 in a manuscript kept in the Montefiore collection (MS London, Jews’ College 15), and recently put up for sale (Sotheby’s Catalogue, October 27&28 2004, no. 15).

162 The earliest dated colophon, whose date (903/4) is undoubted, is also the earliest colophon containing an indication of locality – Iran (see Codices hebraicis, Part I, ms. 2). In the manuscript of the Prophets, apparently written by Moshe Ben Asher even earlier (894/5), and which until recently had been considered the earliest dated codex, the location of its writing in Tiberias was also noted (see Codices hebraicis, Part I, ms. 1).

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community but the colophon, which constitutes in this case an irreplaceable
documentary source. In the Iberian Peninsula, for example, manuscripts were
written in ninety localities. Despite the accidental nature of their survival, the
number of extant manuscripts from various communities is a valuable social indicator
of the intellectual level of the community, its centrality, and size. The following
examples are based on dated manuscripts and on undated but localised manuscripts,
e.g. 37 manuscripts written in Jerusalem in the years 989-1072 (8 manuscripts) and
1366-1532 (29 manuscripts, some non-localised, but whose locality can be surmised
based on other manuscripts by the same copyist written around the same time or based
on historical information). Fifty-two manuscripts (the writing locality of 13 of them
is estimated) were written in Cairo (including Fustat, ancient Cairo) consecutively
from 1006 until 1540 (the upper limit of the corpus of dated manuscripts we have
studied). In Ferrara (Italy), 56 manuscripts (the writing locality of 4 is estimated)
between 1396 and 1534, most within a period of less than a century, between 1446
and 1534. More than two thirds of manuscripts written in Ferrara from 1396 until
1534 are written in a Sefardic script. From the period between 1198 and the year of
the expulsion (1492), 23 manuscripts explicitly described as having been written in
Toledo have survived, in addition to three more which can be estimated to have been
written there. Several other manuscripts that were apparently written in Toledo are
known to us because they are mentioned in halakhic literature. In Candia (Iraklion),
Crete, 24 manuscripts (the writing locality of 10 of them is presumed) were written
during 1375-1540. In Avignon, during 1378-1530, 14 manuscripts were written (the
writing locality of 2 of them is presumed), while in Worms during the years 1325,
1450-1525 only 8 manuscripts were written (the writing locality of 4 of them is
presumed).

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163 Michael Riegler wrote a doctoral dissertation, which I supervised, about the colophon as an
historical source; in it he detailed these localities in Spain, France, Germany, North Africa, Italy,
Greece, and in the Middle East. See M. Riegler, ‘Colophons of medieval Hebrew manuscripts as
164 See a detailed list of localities in which manuscripts noting the year of the copying is indicated (and
also a list arranged by date of all the Iberian manuscripts), in: M. Beit-Arié, ‘Colophoned Hebrew
Manuscripts Produced in Spain and the Distribution of the Localised Codices’, Signo : Revista de
165 The reason for the long intermission in copying produced in Jerusalem is the Crusader conquest of
the city and the prohibition against Jews settling there.
166 Testimony concerning a manuscript written in Ferrara as early as 1278 appears in a late copying of a
manuscript containing a copy of the original colophon, according to which the original manuscript had
been copied there that same year by Avraham ben Yom Tov HaCohen, an illustrious scribe who was
active in Rome in the late 13th century. On this Avraham ben Yom Tov HaCohen, see below, n. 209.
Copyists sometimes indicated the exact location where the copying took place, such as the home of the commissioner of the copy, such as a person’s yeshiva, an attic, or even a prison. Several examples follow:

Me’ir ben Moshe, who copied a manuscript in Camerino (Italy) in 1399 for Binyamin ben Isaac, notes that he copied it while staying in his home and supported by him (והעתקתיו בביתו ובהיותי סומך על שולחנו).

Similarly Yehuda ben Solomon noted that he produced a manuscript in 1439 for Joel ben Avraham of Recanati, from a family of dayyanim, whose residence is in the town of Macerata (מציירתא), and that it was written in Visso (Italy) in his home where he stayed with him ‘year after year’ (וכתבתיהו פה בויסי ביהו והיהתי מתגורר עמו מידי שנה). Again in Italy, a copyist noted that he completed his copying in 1470 on the day he left Massafra (פרסא מרפא) where he was curing the Captain (בירו מתאצי בער מצאפרא ב맙די ב MacOS). Isaac ben Ibn Shoshan, who had been expelled from Spain, notes in a colophon of a book, presumably copied for his own use, that he wrote it on the seaside of Tunis, which is called Goulette, in the home of the Rabbi Haim and Rabbi Makhlouf Abul’eish’ (בשפת הים של מדינת תניס ובר חים ור’ מכלוף אבולעיש’). Binyamin ben Yo’av, on the other hand, notes in his colophon from 1403 that he wrote the manuscript while staying in prison in Bologna (ב蠋ניק ובירו בולוניא אז ולבי היה סגור בחותם צר, גם לא היה לי סמך מספריי). Shimshon ben Avraham mentions only two such hired artisans – teachers and scribes: "וכתב רבינו שמשון בר’ אברהם זצ”ל שאם יש לאדם סופר או מלמד בביתו (’Or Zaru’a, Zhitomir 1862, section 172, and couched in similar language in in T. Eruvin 72b lemma (משורר)"

167 As evidenced by a number of colophons, some of which are presented below. It is reasonable to assume that copying was performed at the home of a person who could afford to hire a copyist to produce books for him, and that this may have involved not only the guarantee of comfortable conditions for copying but also the owner’s responsibility to obtain the copy, guarantee its protection, and verify its proper use. It may be that providing accommodation for the copyist in the home of the owner was a common custom, as suggested by the response of Shimshon ben Avraham of Sens, which relates to hired artisans who live in the home of a homeowner for extended period (I am indebted to Simha Emmanuel for drawing my attention to this rabbinic source – as well as many others – which sheds light on book craft processes). Shimshon ben Avraham mentions only two such hired artisans – teachers and scribes: teachers and scribes: (’Or Zaru’a, Zhitomir 1862, section 172, and couched in similar language in in T. Eruvin 72b lemma (משורר)).

168 MS Oxford MS. Mich. 384 (Neubauer Catalogue 187). Its Sefardic script attests to the scribe having immigrated from Spain or from Provence, presumably in wake of the persecutions of 1391. Cf. more on this scribe, below, in the text referenced by n. 187.)

169 MS Hamburg, SUB Cod. Levy 3 (Röth & Striedel Catalogue 17). These colophons, like others from 15th century Italy, shed light on the circumstances of hired copying. The copyist joined the patron’s household for the purpose of the copying, and according to the testimony of the copyist in the colophon cited here, this living arrangement was renewed annually.

170 MS Paris Hébreu 210 (See Manuscrits médiévaux, I, 131).

171 MS Paris Hébreu 769 (See Manuscrits médiévaux, III, 51).
The scribe of MS New York MS 8227, which was written in Paris in 1390 in a Sefardic script also wrote the manuscript in prison:

אני אברהם ב"ר שלמה נבתוי'א
הררי המכונה דבניולש כתבתי זה הספר
הנקר' עמודי גולה וסיימתיו בעיר פריש בתפיסה עירון
(See Manuscrits médiévaux, I, 79).

Another manuscript copied in prison is MS Parma, BP Parm. 2977 (De-Rossi Catalogue 453), written by Joshua ben Meir ben Isaac in a cursive Ashkenazic script in Cremona (Italy) in 1480:

סיימתי זה建築ו הבן
הידרサイמי הבן הבדח אפשתי שונות של ידו ושל עמי
ה.MockMvcי הקצאת אאתיれ זמר טרי
(See Manuscrits médiévaux, II, 62).

The following are prime examples: Shemu’el ben

A comparison of the parascriptural characteristics of this manuscript with those of MS Paris leads to

5. Personal and historical information

A few copyists included information about their personal lives in their colophons, as can be discerned in a few of the precise indications of locality cited above. These pieces of information may be very brief, such as a mention of the copyist’s age, especially in Italian colophons. The youngest copyist thus mentioned was 12 years old, and the oldest was 79. The following are prime examples: Shemu’el ben
Shemu’el of Modena copied a manuscript in Italy in 1475 at the age of 14.\textsuperscript{176} The copyist of a self-produced manuscript, in Perugia (Italy) in 1366, noted his age: וכתבתיו בהיותי בו בחמשה עשר שנים.\textsuperscript{177} Another Italian colophon, written by Shelomo HaLavan the physician, son of Isaac HaLavan in a Sefardic script in Crotone, Calabria in 1472, mentions the scribe’s age as 24 years.\textsuperscript{178} It seems that copyists tended to note their ages to express pride at their ability to produce a manuscript at either a young or advanced age. Other examples are of copyists aged sixty and upward: the copyist of MS Cambridge, Add. 376 was 60 years old. The scribe of MS Munich, BSB Cod. Hebr. 3, a mahzor that was completed in 1459/60 in Ulm, Germany, boasts in a colophon written in a grand calligraphic style that he was 61 years of age, and that he wrote the mahzor without the aid of glass spectacles (ברילן).\textsuperscript{179} Three manuscripts were written by copyists aged 63: MS London, BL Add. 17806 (Margaliouth Catalogue 962), which was completed in Italy in 1384;\textsuperscript{180} MS Oxford MS. Hunt. 309 (Neubauer Catalogue 1550), which was copied in Thebes, Greece in 1415 in a Sefardic script by Shem Tov the physician, son of Ya’aqov (ممדיות ספראות) who wandered between Greek towns and copied a few manuscripts, particularly Kabbalistic ones, in the beginning of the fifteenth century;\textsuperscript{181} MS Vienna, ÖNB Cod. Hebr. 179 (Schwarz Catalogue 30), which was written in Provence in 1432. And at the age of 70, in 1456/7, the poet and scholar Moshe ben Isaac da Rieti, probably in Mantua, copied philosophical works for his sons, so that they would not be absent from the collection of books he himself had copied, commissioned, or bought: בהבת המספר הזה עם קוצר השלמות אשר書きתי בחוזתי בך.

\textsuperscript{176} MS New York MS 8263. During the ten ensuing years this copyist wrote three more manuscripts which have survived.

\textsuperscript{177} MS London, Beth Din 48 (offered for auction at Christie’s in 1999).

\textsuperscript{178} MS Paris Hébreu 940 (Manuscrits médiévaux, I, 131).

\textsuperscript{179} Cf. the colophon of MS Paris Hébreu 31 (Manuscrits médiévaux, II, 45), written in Zaragoza (Spain) in 1404: \textsuperscript{<...>} (the copyist did not mention his age).

\textsuperscript{180} At the end of the copying, before the colophon, the copyist wrote: \(\text{בן ששים ושלש שנה אנכי היום} \) (fol. 300r).

\textsuperscript{181} He indicated his age, according his father’s inscription, in the first of four colophons he wrote in this manuscript, fol. 5v. In the fourth colophon, written in Philippopolis, Plovdiv, Bulgaria) he incorporated a personal bit of information about the circumstances of his 18 day stay in the home of R. Aaron, while suffering from gout: \(\text{חולה מן הפודגרא ועמדתי שם י"ח ימים חולה לבית הנכבד ר' אהרן} \) (fol. 159v). On the copyist, who expressed a wish in the third colophon (fol. 120r), that he might arrive at ‘the land of the gazelle’ (Eretz Israel) during his lifetime, and who incorporated in his copying a remark about the persecutions of 1391 and other events, see J. Hacker, ‘Aliyat yehudei Sefarad le-Erets-Yisra’el veziquatam eleha bein 1391-1492’, Shalem, 1 (1974), p. 114 (in Hebrew), and in the appendix (pp. 133-137, in which colophons from this manuscript are cited).
Information on the exact fees of hired scribes, cited from documents, literary sources, and indications of owners, in chapter 1, above, at the end of section 5, exists only in a small number of colophons, nearly all from Italy. However, it was common in Italian colophons to note the fact that the scribe had received his fee from the person who commissioned the copy, without specifying the sum, and usually using the standard formula: משלם or sometimes (‘דמי שכרתי’ or שכרתי טורחי’ or הנטעה’.). The earliest colophon that mentions a scribe’s fee appears in one of the early Italian manuscripts, written in 1145. In a manuscript of the Prophets, self-copied by an Ashkenazic copyist in 1335, the vocaliser added a brief colophon in which he noted his fee and the duration of the job as three weeks and 35 dinars.

Similarly, a fifteenth century vocaliser in Italy wrote a colophon that states his fee as five florins (פרחים). In a colophon of a manuscript of Rashi’s commentary on the Pentateuch, written in Camerino (Italy) in 1399, in the home of the owner who commissioned the copy, the Sefardic scribe, Meir ben Moshe mentioned his fee as 4 florins, not including the reimbursement of expenses.

Utterly unique documentation, not only of the copyist’s fee but also of the other expenses entailed in the production of a manuscript, as well as information about the quality of the model has been preserved in MS Moscow, RSL, 606. On fols. 27-90 the commissioned scribe Avraham <ben Isaac> of Jerusalem, ‘the prisoner of hope’ (אסיר
copied Kabbalistic works, in an Ashkenazic script, in Venice, 1393. In his colophon, the scribe noted the superior quality of the forlage from which he was copying, which wasa proofed by its author:

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thus also providing important information regarding the textual mode of copying, which will be discussed below. Following the colophon, the hired scribe detailed the breakdown of the production expenses: paper (11 dinars), ruling (24 dinars), writing (4 ducats) – all of which together amounted to 5 ducats. 189 The breakdown of production costs shows that copying was the most expensive component. It is surprising that the cost of ruling, which was never recorded as an independent component of book production, was more than double the cost of the paper. 190

Some copyists incorporated contemporary historical information in the colophon, and usually these mentions involved personal information. Some of those who had been expelled from Spain and Portugal, as well as Sicily, mentioned the expulsion in the colophons written in the years immediately subsequent to the expulsion, and some reckoned the years from the time of the expulsion. A number of colophons noted natural disasters. In a manuscript written in 1356 in Spain, probably in Seville, an earthquake is recorded:

Some fifteen years earlier, in 1384/5, Avraham ben Elia from Imola in northern Italy noted the price of paper while taking inventory in his library:

ועוד א' סידור מכל תפילות השנה וכתבו אלי מר' משה בכ"ר מתתי' כ"ב בשכר עשרה דוקטי לבד הקווינטורי

quintemi are 5 bifolia quires, but also quires generically; see below, chapter 4, under the heading 'composition of the quires'>

еспектив סופרין הז הייטleshון שקר 13/45 וקריט(Photo, 387/5, היקווקיטיני עלייה הז ידואטיז וביולניינ). See Bonfil, 'List of Hebrew Books', p. 61, no. 20. Bonfil notes that 'the price of paper was the equivalent of 350 kg of bread or 350 litres of wine, and was more than half of the sum received by the scribe [trans. I.G.]. In comparison with the overall cost recorded in MS Moscow, it should be taken into account that the scribe’s fee probably included the ruling of the quires purchased by the person who commissioned the copying. One cannot assume that in 1384/5 ruled quires were already being sold in Italy, as was common in the 15th century when quires were ruled in ink, apparent by means of a mass mechanical production process, and were distributed in stationery stores (see below, chapter 6, in the discussion of ruling, section 3e).
The most emotionally wrenching colophon, an altogether shocking historical and personal document, was not inscribed by a抄写者, but rather by a vocaliser-Masorete within a manuscript of the Prophets and Hagiographa (MS Vienna, ÖNB Cod. Heb. 16 [Schwarz catalogue 5]). When the Masorete came to the opening that starts from the middle of Psalm 17, he used the lower margins to inscribe a colophon in very large letters that comprised of the Masora Magna in micrographic letters, according to the tradition elaborated by the Masoretes. The colophon, which extends over the openings of fols. 249r-268r (until the middle of Psalm 105), reports that the scribe had begun to vocalise and annotate the Masora in 1298, and that he had written it in commemoration of 146 communities that had been destroyed and pillaged, events in which he lost to the carnage his own wife, two children, and both a brother and a sister:

191 MS Milano, BA E 149 inf. (Bermheimer Catalogue 9). Cf. Berliner, ‘Ein Gang’, pp. 104-105. In the colophon of MS Jerusalem Heb. 8° 6287 it is stated:

192 MS Boston, Countway Library of Medicine, Med. Ms. Heb. 5, fol. 108r.
The vocaliser-Masorete was describing the bloody events that took place in southern and central Germany between April 20 and October 19, 1298, known as the Rindfleisch persecutions. Thousands of Jews were killed in a wave of massacres in 146 communities, according to this Masorete's account.

6. Information on copying conditions and on the exemplar
The two previous sections presented select examples of colophons containing personal information about the copyist and the individual location of the copying (e.g. the home of the owner, or prison), and these shed light also on the circumstances of the copying, which may have affected its quality. In addition to such colophons, there are others that indicate the material conditions of the scribes or the physical conditions of the copying. Thus, a German scribe had no hesitations about writing in the margins at the end of a manuscript of the Psalms, *Shir hayihu* and *Shir haKavod*, copied in 1420, that he would not be able to write any more, because the money had run out. No doubt, this was because the person who commissioned the copy had second thoughts and cancelled the order. Another scribe, whose family hailed from Lyons, and who before 1445 had copied a prayer book (according to the liturgical tradition of France), along with halakhic works, apologised for not copying all the components of the prayer book due to the cold winter weather:

"אני כות' נختص, רגל אחד
בפנים ורגל אחד בחוץ,
אחד אצל האש ואחד חוץ מאצל האש,
עכ' אני אני כל יד
נדיבי הקש משלום
פריתי בבעית בבלבל tokו בעבria כשביא הקש אתpanion מ NSString רוח מית' יהו
אני על כלק

193 Named after the German knight Rindfleisch, who incited and led the massacres.
194 The colophon was cited by S. Salfeld, *Das Martyrologium des Nürenberger Memorbuches*, Berlin 1898, pp. 29–58, and in B.Z. Dinur, *Yisra'el ba-ayola* 2, vol. 2, Tel-Aviv-Jerusalem 1967, pp. 594-607 (in Hebrew). אברזוש who is mentioned in the colophon is a nickname of Avraham; the vocaliser-Masorete wrote the name אברהם using letters formed by the micrographic rendering of Masora text, on fol. 225r. The vocaliser-Masorete of a copy of the Prophets that was completed apparently in 1306, in France (the identification of the locality is uncertain), in similar fashion, using very large letters composed of the Masora text, wrote a full colophon on the lower and upper margins of 14 folios of MS San Lorenzo del al Escori, the Royal Library ms G-I-1 (F.J. del Barco del Barco, *Catálogo de Manuscritos Hebreos de la Comunidad de Madrid*, vol. 1, Madrid 2003, no. 11):

195 MS Vatican Vat. ebr. 27, fol 186v.
196 Although in the colophon the scribe inscribed at the end of the Book of Psalms – which contains the major part of his copying – he did not mention that he had made the copying for another person. Perhaps it should be surmised that he had prepared the copying for a casual buyer, who never materialized.
197 MS Parma Parm, 3009 (De-Rossi Catalogue 749), and see Richler & Beit-Arié Catalogue (Parma) 878.
It is unnecessary in this context to cite the many cases in which copyists claim in the colophon that they had copied from a corrupt or error-riddled exemplar. These expressions have a formulaic character, and are intended as a conventional caveat in face of claims of inaccuracies in the copying. A few colophons convey direct, important information about the conditions of the copying and the quality of the exemplar, for example, MS Moscow, RSL, Guenzburg Collection 606, cited in the previous section, whose scribe made a point of reporting information about the copyist of the trustworthy exemplar he had used. Several evidences regarding this matter were already cited above, in chapter 1, section 4, n. 108. A more complex example is found in a colophon by the Karaite scholar Caleb ben Eliya Afendopolo at the end of a copying of Ptolemy’s Almagest by Abu Maḥammad Jabber ibn Aflaḥ, translated by Ya’aqov ben Machir. The copyist, who copied for his own use in 1482, in Constantinople or nearby, presented information not only about the exemplar he used as a forlage, but also about the copy from which his source had copied, which was the original manuscript of the translation:

Illuminating information about copies of Sefer Hapli’a (a kabbalistic work) and their forlage was reported by an owner who commissioned the copy of another Byzantine manuscript, written in Candia in 1462/3. In a comment written in a cursive Ashkenazic script at the beginning of the manuscript, which was copied for him in a Byzantine script, he noted:

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198 Like the scribe of the aforementioned Moscow manuscript, so too another Ashkenazic copyist of a halakhic manuscript (Sefer Mordecai, by Mordekhai ben Hillel), copied in Italy in 1418, wrote in the colophon: ‘והעתקתי זה הספר מן מרדכי מדוייק ביותר אשר היה מדוקדק מפי מהר”ר שמואל שפירא ומפי החבר ר’ בנייט דקבאלון’ (see Manuscrits médiévaux I, 83).

199 In medieval Hebrew, מThôngיק is a translator.

200 The most common term in the Middle Ages for a copy or version that served as a model for the copying is עตรวיא. See above, chapter 1, in the text referenced by n.107, and in the colophons cited below in chapter 13.

201 MS Paris Hébreu, 1024 (see Manuscrits médiévaux. I, 148).

202 MS Vatican Vat. ebr. 187, fol. 3r.
Fascinating facts about the circumstances of the copying of a work can be found, for example, in the colophon of one of the few manuscripts of *Kitsur Sefer Mitsvot Gadol*, by Avraham ben Ephraim. The colophon describes the arrival of a copy of this (unknown) work to Ferrara in 1278, about a week before Passover, brought by a French scholar named Ya’aqov, who was on his way to Venice (accompanied by his son Dunin) in order to travel by ship to Acre, and who stayed in the home of Akiba ben Zacharia while in Ferrara. The host appreciated the unique quality of the book and wished to purchase it, but because its owner refused to sell, he commissioned a copying, which was completed quickly, within a few days during the holiday week of Passover:

Indeed, the manuscript comprises nine quires, containing only the first chapter of Genesis.

i.e. 500 pages.

Indeed, this manuscript, which the person from Candia who commissioned the copy recognised as the only copy containing the entire Pentateuch, still exists today as MS Vatican Vat. ebr. 195. The manuscript was copied by an anonymous scribe who decorated the name Yosef when it occurred in the text; this person should be identified as Yosef Bonifacio, the copyist of the book who the Candian owner mentioned in his note, as ascertained by the comparison of his hand to MS Vatican Vat. ebr. 220, which was written by Yosef Bon Facio Ben Gershon. The manuscript contains 487 folios, like the approximate estimate of the Candian owner in his note, see. Richler & Beit-Arié Catalogue (Vatican)

Indeed, the name Ya’aqov was highlighted in the copied text. The person from Candia who commissioned the copy provided additional information, unrelated to the production of his copy: besides the full copying made by Yosef Bonifacio, the Bereshit portion (Genesis 1-6:8) of the rare Pentateuchal text was also copied by Michael Domano. The latter copied the entire Bereshit portion (which extends over 120 folios in the copy brought by Ya’aqov), and not only the part that the person who commissioned the copying had selected to have copied by Ya’aqov (and indeed, MS Vatican Vat. ebr. 187 contains only 77 folios).
This chapter will not discuss the evidence contained in colophons that pertains to the modes of critical editing of copied texts, particularly texts critically copied for self use by scholars, and which sheds light on the modes of transmission of texts written with the Hebrew alphabet. This topic has already been alluded to in chapter 1, section 5, on the singularity of Hebrew book production, and will be elaborated below, in chapter 13.

7. The duration of copying and its pace.

More than two hundred and fifty colophons contain information concerning the duration of copying, shedding additional light on the little known craft of medieval Hebrew production, on the output of scribes and copyists. Such information is communicated in one of two ways: the first direct and explicit, and the second indirect and inferred. Employing the less common but more reliable direct mode, copyists explicitly stated how long it took to complete the copying, e.g. 44 weeks (מ"ש), as did Simḥa HaSofer ben Yehuda HaSofer of Nürnberg, the professional scribe of the monumental oversize illustrated maḥzor known as the Worms Maḥzor, 209

209 MS Parma Parm. 1941 (De-Rossi Catalogue 813), fols. 153- v-154r. This halakhic collection contains several codicological units, of which Kitsur sefer mitsvot gadol is one (see Richter & Beit-Arié Catalogue [Parma] 876). According to the colophon it was copied by מ"ש - a pen name coding the name Avraham in gematria, which was adopted by the illustrious scribe Avraham ben Yom Tov haCohen, and which he used to record his name in only four of the eight manuscripts he wrote; see M. Beit-Arié, ‘The Cryptic Name of the Scribe Avraham b. Yom Tov HaCohen’, Israel Oriental Studies, 2 (1972), pp. 51–56; Idem, ’Nosaft la-ma’atiq Avraham b. Yom Tov HaCohen’, Kiryat Sefer, 56 (1981), pp. 546-547 (in Hebrew). [Mi-ginze haMakhon le-Tatslumei Kitvei haYad ha’Ivriyim, ed. A. David, Jerusalem 1995, p. 130-13]. There is no doubt that the copy in question was not written by Avraham ben Yom Tov, who, was however active in Rome at the time (according to the sole mention of locality). This Kitsur was written circa 1400 in a Sefardic and not an Italian script. It follows that the colophon in question is a late copy of the original colophon.

210 A number of examples were mentioned by Steinschneider, Vorlesungen, pp. 67-68.

211 On the speed of copying and daily output of Latin copyists, see J.P. Gumbert, ‘The Speed of Scribes’, in Scribi e colofoni: Le sottoscrizioni di copisti dalle origini all’avvento della stampa – Atti del seminario di Erice, X Colloquio del Comité international de paléographie latine (23–28 ottobre 1993), ed. E. Condello & G. De Gregorio, Spoleto 1995 (Biblioteca del Centro per il collegamento degli studi medievali e umanistici in Umbria 14), pp. 57–69, which surveys earlier studies and discussions, abd see also J. Vezin, ‘L’emploi du temps d’un copiste au XI siècle’, ibid., pp. 71–79. Gumbert also classifies the manuscript evidence (excluding information about desired or required outputs, e.g. in contracts, which are not to be found in Jewish sources) into two types – direct evidence and indirect evidence in multi-unit dates.
which was written in 1272, apparently in Würzburg. The Italian copyist Menahem ben Binyamin, who was active during the final quarter of the thirteenth century and copied a number of manuscripts for his own use, boasted of the quick pace of his copying and often noted the duration of his copyings either explicitly or indirectly. The following are the texts of the two colophons of the codex that he copied in 1289:

In order to calculate his particular (self-professed) output, not only must we take into account his testimony regarding the number of work days and the number of folios he produced (the first 140 in seven days, i.e. 20 folios – or 40 pages per day, and another 158 folios, in eight days, i.e. at an identical pace), but other crucial factors, some contradictory, must be considered in the balance. The first of these is of course the dimensions of the surface area and the number of written lines it contained, and especially and even more importantly – the average number of written signs per line, a quantitative datum which when multiplied by the number of lines may serve as a

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212 MS Jeruslaem Heb. 4° 781/1, see Manuscrits médiévaux. I, 7; and see the colophon inside the Worms Mahzor, facsimile volume, fol. 34v and the digitized manuscript in the NLI website.
213 See above, n. 63.
215 MS Cambridge Add. 173.
216 For the acronym of his name which includes blessing formulae that are unique to him, see above, n. 63.
217 The notation of the day of the week, the day of the month, and the month, in this manner – here indicating Thursday, the 2nd of the 5th month, i.e. the month of Ab (in 1288/9) is known to us from Italian colophons that have survived from the 13th century. Later, this pattern in colophons is extremely rare (its only occurrence is in the 14th century in the cryptic colophon mentioned above in n. 159). In the 15th century a few Italian copyists resumed noting the month with an ordinal number (according to this method, Nissan is of course the first month).
218 The second colophon also notes the date according to the pattern described in the previous note, although it seems that the copyist erred slightly and placed the month’s notation before the day in the month. The order of elements here is the day of the week (‘the fourth’), the month (‘to the fifth’), and the day of the months (‘to the twenty-second’). His confusion is also apparent in his writing in that place.
convenient measure for comparing copyings with different written surface areas (the written signs, including the spaces between words, as in the modern day practice of counting print characters, were counted for every five lines in the manuscripts documented in the SfarData database). In addition, one must take into account the type of script, which determines the number of strokes required to inscribe the letters, its style, quality of execution, size, and esthetics – all factors that crucially impact the speed of writing. Moreover, the type of text also affects the copying output: the copying of a consecutive and uniform text of uncomplicated structure differs from the copying of a maḥzor comprised of multiple elements, which are reflected in a wide range of script sizes, and differs also from the copying of a multi-layered halakhic corpus, interspersed with critical comments, or comprised of a centre text surrounded by marginal commentaries, which are copied in a pattern that is tailored to the centre component. Similarly, the speed of copying could be conditioned by the degree of investment in parascriptural means used by the copyist to improve the readability of the copied text or to present it in lines of uniform length, an object requiring intricate tricks that would slow down the copying speed. It goes without saying that in analyzing the information about the speed of copying we must distinguish between manuscripts that had been commissioned and were copied uncritically by professional or casual scribes and copies that were user-produced by learned persons reproducing the text critically.

The manuscript copied by Menahem ben Binyamin is of small dimensions (the dimensions of the written surface are 141×91-96 mm), and is written in a relatively minute current semi-cursive script, which could even be characterised as a cursive in that period. For sake of comparison, the dimensions of the written space in the monumental Worms Maḥzor are 303×211 mm, and it is written in a large square Ashkenazic script reminiscent of the Gothic style, which requires more pen strokes including decorative elements to produce the letters. We do not know exactly how many folios the Worms Maḥzor included, since only one volume of it containing 219 folios has survived, but one can fairly estimate that it included around 400 folios, and if this is so, the speed of copying was no more than two folios per day. Despite the

219 i.e. whether square, semi-cursive, or cursive; see below, chapter 11, in the section entitled ‘The three-operation mode of the Hebrew script structure’.
220 See below, chapter 8.
221 See below, chapter 7.
222 For the types of script in medieval Hebrew books, their modes, and historical evolution, see below chapter 11.
large dimensions of its pages, it displays fewer letters per page than do the pages of Menahem ben Binyamin’s miniature manuscript. At the same time, Menahem’s style of writing required a lesser investment of time.

In another manuscript that he wrote during the years 1287-1288, Menahem inscribed a colophon at the end of each of its two copying units, in which he documented the number of days spent on the copying:

The second colophon relates to a part of the manuscript written more than a year later, but this part has been lost, and therefore we cannot calculate the scribe’s output for this section. In any event, the 1287 colophon reveals that Menahem’s output increased to as much as 26 folios per day. This increase can be explained by the even smaller dimensions of the written area, 106×84 mm.

In calculating the number of signs copied daily, which goes further to clarify Menahem ben Binyamin’s self-professed output, we see that in the first manuscript he copied an average of 42,640 signs per day, and in the second manuscript 64,646 signs per day. Menahem’s self-declared speed of copying is open to serious doubt, when compared not only to the average speed of Latin copyists, but even to their outlier

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223 MS London Or. 6712.

224 Another example of this scribe’s unusual predilection for detailing the number of days he devoted to copying is MS Parma Parm. 2784 (De-Rossi Catalogue 1390), a collection of Kabbalistic works that was copied during 1286-1287 (it is missing ten quires at the beginning, some of which have been identified by Daniel Abrams in MS New York MS 8124 (according to M. Idel, R. Menahem Requaṭi hamequbal, Jerusalem-Tel Aviv 1998, pp. 45-46 [in Hebrew]). In the only manuscript that Menahem wrote for another person he inscribed six colophons. In one of them he noted that he had copied the same text unit in ‘24 nights, and a bit more’ (fol. 24r). Considering the number of missing leaves, it seems that his output at nighttime was much smaller – some 5 folios per night. The small output relative to other manuscripts, which were written in adjacent years, should be ascribed primarily to the much larger writing area (168X108 mm), and to the nighttime copying times, which clearly were briefer than the daytime copying times, and also perhaps the fact that the manuscript was written for his teacher and not for his own use might explain the varying speeds. On other colophons and the segments by other copyists in the manuscript, see Richler & Beit-Arié Catalogue [Parma], 1191.
outputs. According to Gumbert’s study, based on a corpus of 800 manuscripts containing direct or indirect evidence of the duration of copyings, the average output of a medieval copyist was a mere 2-3 pages per day, without marked variations between different zones and periods. Using the catalogues of dated manuscripts as his source, Gumbert could not calculate the number of copied signs, which are undoubtedly a more reliable measure (and especially when comparing the same type of script) than the number of pages, but he also sorted his evidence according to the height of the manuscripts and found that the abovementioned average pertains to manuscripts up to 20 centimeters in height (like the height of the manuscripts copied by Menahem ben Binyamin). In addition he examined the effect of the type of script on the speed of copying, and concluded that when formal scripts were used, the limit was one page per day on average, and with more cursive scripts – two pages per day, whereas using the cursive Humanist script produced an average speed of 3.5 pages per day.

These doubts are further reinforced by data reported by another Italian copyist, who copied for himself (but also for others), and explicitly mentioned the duration of his copyings three times, in two manuscripts. The name of this scribe is Menahem (נמאים) ben Avraham (נברא) ben Benjamin ben Jehiel, who was active in Rome and its vicinity between 1319 and 1326. He too, like Menahem ben Benjamin, wrote with a semi-cursive current script, although smaller, even miniature, which one would naturally expect to produce a greater output. His testimony is contained in the colophon of a manuscript which is bound in three volumes, including a collection of biblical commentaries that he copied in Rome in 1323 for his personal use. The total of all the written folios is 232 and the dimensions of the written area are 228×176 mm, in other words, the book’s layout is larger than those of Menahem ben Benjamin, and yet his writing is smaller and more condensed, and the number of lines

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225 Above, n. 211.
226 In the regulations and contracts between the universities of Paris and Bologna, and the scribes employed to copy texts for students according to the pecia system, smaller outputs were stipulated: 0.57 folios per day was the minimum output permitted by the University of Paris, and at the University of Bologna, the standard output was 32-40 folios per month; see Gumbert, ‘The Speed of Scribes’, (above, n. 211), pp. 65-66. As examples of deviations from the average of two folios per day, he cites cases of outputs of more than five folios per day in rough or cursive scripts, especially humanistic scripts (ibid., pp. 66-68).
This unusual and yet self-evident comment about the subtraction of holidays in which writing is prohibited from the full duration of the copying indicates the problematic nature of any attempt to calculate copying outputs in the Middle Ages, because we do not know the extent to which work was carried out consecutively, day in and day out, nor how many hours per day or per week were dedicated to copying. The answers to these questions most probably varied, depending on whether the copyings were performed by hired scribes or were self-produced, in which case the copyists often had less time at their disposal, although Menahem ben Benjamin’s fantastic output seems to belie this assumption. The daily output of Menahem ben Avraham in MS Parma may be calculated according to the reliable measure of copied signs. According to the date of completion of the copying on the 18th of Sivan, the Sabbaths and days of Purim, Passover (including Passover week), and the Pentecost (Shavu’ot) that occurred in the year 5083 must be subtracted from the duration of four months and six
days, leaving 96 days for the copying of 232 folios, i.e. the copying of 2.5 folios per day on average. Since each page contains an average of 6,550 copying signs, his average output was 16,375 signs per day. If we assume that the eves of the Sabbaths and holidays should be counted as half days of copying, another ten days must be subtracted from the total of copying days, leaving us with 86 days. According to this calculation Menahem ben Avraham copied 2.7 folios per day, i.e. an average of 17,685 copying signs. This output by Menahem ben Avraham is a far cry from the output calculated according to the testimony of Menahem ben Benjamin in his colophons. Even if we can deduce from the language of the final colophon that Menahem ben Avraham had also copied a volume containing commentaries to the Prophets and Chronicle, although this information was scraped off the colophon, his speed would not equal that of Menahem ben Benjamin’s self-professed speed. Because of the slight doubt regarding the full scope of the Parma manuscripts that Menahem ben Avraham copied, it is useful that he noted in the colophon of the first part of the manuscript, which contains Ibn Ezra’s commentary on the Torah, extending over 83 folios, that he had completed it in twenty days (‘ונשלם בכ’ ימים’), allowing us to verify the information in the final colophon. Presumably, at least two Sabbath days and two half days on the eves of those Sabbaths should be subtracted from this number, leaving us to calculate his output as nearly twice that calculated according to the final colophon (4.9 folios per day, 32,095 copied signs). This figure supports the hypothesis that Menahem ben Avraham had indeed included the commentaries to the Prophets and Chronicles in the total duration of copying.

Indeed, in another manuscript – MS Roma, Biblioteca Angelica, Or. 72, an oversize manuscript (454×322 mm) – copied by Menahem ben Avraham for his own use, a few months after completing the copying of MS Parma, he inscribed a colophon at the end of a copying of the grammatical section of Sefer Hamikhlol by David Kimhi, in which he again noted the duration of the copying, allowing us to re-confirm or harmonise the earlier contradictory data:

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233 MS Parma Parm. 3118, fol. 84v.
This work extends from fol. 326v to fol. 340v; two Sabbaths and Sabbath eves (according to this scribe’s custom) must be subtracted from the total of fourteen days noted as the duration of the copying, and hence it emerges that Menaḥem had copied only an average of 1.3 folios per day, and yet these folios are of wide dimensions, and each columns contains 92 lines of dense script! Each column contains 72 copying signs per line, on average, i.e. 144 signs per line across two columns, 288 per line across the four columns of the folio, and a total of approximately 26,500 copying signs per folio. His average daily output was therefore 34,450 copying signs. This calculation comes close to the figures derived from the data in the colophon in the first part of MS Parma, thus validating the possibility that indeed, the figures at the end of the MS Parma copying included the volume that did not survive. These data would appear to reinforce our doubts regarding the figures provided by Menaḥem ben Benjamin, whose writing was less current than that of Menaḥem ben Avraham.

A variant form of directly reporting the duration of the copying is the practice of some copyists not to sum up the copying period but to note the precise beginning and completion dates of the copying. The copyist and vocaliser Qerashaviahu ben Isaac, for example, notes in a rhymed colophon he wrote in France in 1242-1243:

This codex is complicated in terms of the book’s archaeology. It is in fact composed of two manuscripts bound out of order in terms of their production dates. On fols. 293-6 (fol. 293 was left blank) the scribe copied the books of the Minor Prophets and the Hagiographa in the centre of the page in a square Sefardic script, and alongside the Prophets, he wrote out the columns of the translations in a small square script of the same type. The name of the copyist was evidently Yitsḥaq (according to the highlighting of this name in the biblical text). On the margins of the pages many commentaries were written in a semi-cursive, fluent, miniature Italian script, most of which were copied by Menaḥem ben Avraham, in Frascati in 1326. Fols. 294-343 were written by Menaḥem only, in 1323, including grammatical works written in two columns over the surface of the entire page in the same miniature script appearing in the margins of the later manuscript. According to an inscription on fol. 7r, Pope Leo X (of the House of Medici) presented the manuscript as a gift to the Hebraist and Christian Kabbala enthusiast Egido da Vitero. According to his description in the dedication inscription, this took place before his appointment to Cardinal (July 1, 1517), while he was still acting as the ‘General’ of the Augustinian order. On Egido’s interest in Hebrew literature and his determination to purchase Hebrew books, see M. Bejt-Arié, ‘Eliyahu Levita as a Scribe, Author Scribe and Codicologist’ (a paper read at a conference held in Oxford Centre for Hebrew and Jewish Studies, Yarnton Manor, 17–18 December 2007, but the planned proceedings have not been published. However, the article is accessible in the website academia.edu.
Another example from Spain appears in a colophon of Sefer he‘арוק, written in 1284-1285 in the fortress of Seia, in a square Sephardic script by a hired scribe:

וכתבתו וידי טפם ומור, והבשה שפתה שיר פמוקר,/catalog of the colophon, by a hired scribe:

שטעמה זכור ושנ)get the cost and the number of intervening folios.

The indirect mode for deducing the copyists’ pace and their outputs relies on multi-colophonied manuscripts that do not contain an explicit indication of the duration of the copying. In many of the multi-text or multi-section codices the copyist wrote a colophon at the end of each textual unit, or after several textual units. Each manuscript containing at least two colophons with detailed dates allows us to easily calculate the time difference between the dates and the number of intervening folios. Clearly, the uncertainties regarding the consecutive nature of the writing and the working hours, which hampers our ability to extract quantitative conclusion from the evidences of colophons that explicitly state the duration of the copying, are even more burdensome in respect to these indirect evidences. One cannot know whether the copyists continued to write a new text immediately consecutive to the completion of a textual unit (that was inscribed at the end with a colophon), or whether perhaps there was a brief or lengthier intermission in the copying of the collection or the parts of a work.

The following are two outstanding examples: A scholar in Tlemçen, Algeria in 1455-1456, who self-produced a copy of the Aramaic translation to the Hagiographa containing only 120 written folios, inscribed eight colophons with precise dates – one colophon at the end of each book of the Hagiographa (except one).237 MS St. Petersburg Евр.-Апаш. I 1 contains large segments of the eight volumes of the Karaite

235 MS Cambridge Add. 1564 (8), fol. 316v. The copyist began his copying on the 8th of Ab 5002 (1242) and ended it on the 2nd of the second Adar (in a leap year). He did not note the year in which the copying ended, but it is clear that he meant the second Ab following the beginning of the copying in Ab, i.e. in 5002 (1243). The meaning of the formulation and is unclear. Nahum Golb believes this can be understood as the second day of the week, and according to the date, which falls on a Tuesday, he proposes that the copying was ended on Monday night (see N. Golb, Toledot hayehudim ba-‘ir Rouen biyemei habeinayim, Tel Aviv 1976, p. 152, n. 435 [in Hebrew]). The attribution by Golb of other manuscripts to Каршебיהо (ibid. p. 129, 157, and cf. p. ix) is unfounded. The only common feature between them and this manuscript is the script type, but there is no doubt they were written by different hands, as clearly demonstrated by the parascriptural characteristics.

236 MS Munich, BSB Cod. Hebr. 142, fol. 195v.

237 MS Paris Hébreu 110, see Manuscrits médiévaux, I, 108, where all the colophons are shown, and see ibid. information about the copyist Natan Sholal.
Japeth ben Eli’s long commentary in Judaeo-Arabic on the portions of the Tora (the books of Genesis, Exodus, and Leviticus; the commentary also includes the verses of the biblical text in a large square script). It was copied by one copyist, apparently for his own use, in the Middle East in the course of the fourteen years between 1353 and 1367. Among the 1,305 folios remaining from this vast copying enterprise of MS St. Petersburg, there have survived sixteen colophons (all in Judaeo-Arabic), of which nine, from the years 1357-1359 are consecutive. Another two manuscripts kept in the same library undoubtedly belong to the same copying project, based on the dimensions of the written surface as well as their dates, and two colophons have survived in them.

8. Blessings
Nearly every colophon contains blessings for the owner of the copy, and if copied for self-use – blessings for the copyist himself, who also frequently added blessings for himself even when copying for another. These blessings and well-wishes are not only a basic component of the colophon, but are also often the longest component, sometimes comprising around half of the entire colophon. As with other components such as honorifics, and even to a larger degree, the blessings are characterised by conventional patterns and formulae, although they do not display equal diversity. In the early colophons from the Orient, the formulation of blessings was still free and gave expression to the linguistic abilities and pretensions of the scribe. The scribe of the biblical MS Cairo (ostensibly Moshe ben Asher, in Tiberias in 894/5, but most likely written a century later) thus concluded the second colophon dedicated to the owner of the copying:

238 This same scribe, with the amazingly long genealogy (אברהם הרופא בן משה בן שמואל בן יקר בן משה בן שלמה בן אהרן בן שלמה בן אהרן בן ישראל הלוים בני הצ:UI), continued to copy the commentary for the weekly portions of the Book of Numbers. In 1373, he copied some of the weekly portions of the Book of Numbers in an identical format in Jerusalem (see Manuscrits médiévaux I, 70).
239 One of these is MS St. Petersburg Евр.-Араб. I 564, which was written in 1366 and contains a weekly portion from Leviticus, and the other – MS St. Petersburg Евр.-Араб. I 117 – is simply a colophon that survived from a weekly portion of Genesis, from 1358. On the calculation of the speed of copying of the lavish Rothschild miscellany which is kept at the Israel Museum, MS 180/51 (see Beit-Arié, Makings, pp. 181215), see B. Elizur, ‘Ta’arih kettivato shel ketav-yad Rothschild’, Tarbiz, 66 (1997), p. 277, n. 22 (in Hebrew). Elizur concluded that the scribe produced half a folio (i.e. on page) per day on average.
240 On the doubts regarding the authenticity of the earliest dated colophon in this manuscript, see above, chapter 1, section 4: ‘Extant manuscripts’.

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In later periods too, some抄写者 formulated the blessings freely, employing whatever phrases suited their fancy, yet many of the formulae—nearly half of the colophons—wish upon the owner (or the copyist himself) as well as upon his sons and grandsons the benefit of studying the book (and other books); some add the wish of bequeathing the book to his sons. Around half of these formulae are based on the verse from Joshua 1:8 “This book of the law shall not depart out of thy mouth; but thou shalt meditate therein day and night, that thou mayest observe to do according to all that is written therein: for then thou shalt make thy way prosperous, and then thou shalt have good success” (לא ימוש ספר התורה הזה מפיך והגית בו יומם ולילה למען תשמור לעשות בכל הכתוב בו כי אז ת השלישי应急管理ון העו學習_sampling). This verse was naturally cited in biblical books, but it is more frequent in colophons of copyings of non-Biblical texts, and it became a conventional formula. In the Ashkenazic zone the verse was not frequently cited, and in the Orient it was also rarely used. The citation of the verse from Joshua was sometimes also joined or followed by a citation from another related verse, Isaiah 59:21: “As for me, this is my covenant with them, saith the LORD; My spirit that is upon thee, and my words which I have put in thy mouth, shall not depart out of thy mouth, nor out of the mouth of thy seed, nor out of the mouth of thy seed’s seed, saith the LORD, from henceforth and for ever” (ואני זאת בריתי אתם אמר ה' רוחי אשר עליך ודברי אשר שמתי בפיך לא ימושו מפיך ומפי זרעך ומפי זרע זרעך אמר ה' מעתה ועד עולם). The combined or substitute forms were uncommon and occurred chiefly in Spain and to a lesser degree in Italy, and even less so in Byzantium and in the Orient.
but the earliest occurrence is in an Oriental manuscript from 929. The blessing formula concerning constant meditation on the book of the law (with or without the citation) did not come instead of the verbose blessings and wishes that a copyist might include in a colophon, and it usually appears as a concluding formula.

One among these wish formulae is distinctive in that the wish is self-addressed to the copyist; this version is quite frequent in Italian colophons only. This formula usually concludes the colophon: הנחלק המחקק יהיה ספון עם מצדיקי הרבים ככוכבים עלולו עד.

The formula is a conflation of two verses (Deut. 33:21), and (Dan. 12:3). A likely hypothesis is that the formula was coined by the famous scribe Avraham ben Yom Tov HaCohen, who referred to himself as מחק"ק – based on the gematria of his name. Indeed, he is the first to have used this formula (in 1285), taking care to spell מהחקק with the defective orthography as it appears in the Bible, and sometimes marked as an acronym, while those who followed this practice write מהחקק with the plene orthography. This may exemplify how a personal formula became a generally used one, and presumably all formulae similarly began initially as a personal custom which was gradually adopted by contemporaries and then was disseminated in subsequent generations. Only in Yemen do we encounter the repeated occurrence of the formula יהא סימן טוב על מריה, in about one quarter of the manuscripts. In Yemen especially, but also in other countries in the Orient, copyists begged forgiveness for errors that might be found in their copyings, citing the verse in Psalms 19:13 in which the psalmist beseeches God to cleanse him from hidden errors and faults.

Also deserving of comment are formulae and patterns in the colophons that are related neither to names nor to blessings, such as the colophon’s opening formula in the Italian manuscripts, which as we have seen, display a greater general use of formulae compared to other manuscripts. Dozens of Italian colophons open with the phrase

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242 _Codices hebraicis_, Part I, ms. 5.
243 See above, n. 209.
244 Similarly, the first time he used the formula in MS Parma Parm. 2460 (De-Rossi Catalogue 221), he did not write והחלי המחקק but חלקי המחקק, and in the 1289/90 colophon he wrote חלקי המחקק (MS Oxford MS Mich. 533, Neubauer Catalogue 173). Indeed, the form חלקי remained in all the first manuscripts whose copyists adopted the formula, and only close to the middle of the 13th century was the form חלקי substituted for it.
In Oriental manuscripts of the tenth century and to a lesser degree in the surrounding centuries, colophons open with the formula ‘I, so-and-so son of so-and-so’. This pattern is very noticeable also in colophons written in zones of Sefardic culture, especially in the earlier ones, and in the zones of northern France and the German lands. In the many colophons from the Middle East which are written in Judaeo-Arabic, comprising more than half of all colophons and most of which were written by Karaite copyists, the use of patterns and formulae is quite salient. Presumably, these formulae were commonly used in Arabic manuscripts, which appear to display more regularity than do Hebrew manuscripts.

9. Scribal formulae: at the end and the beginnings of the copyings, and at the bottom of the pages

Blessings for completing the copying

Aside from the blessings formulae and professions of humility accompanying the names mentioned in the colophons, as well as the formulae reviewed above, other copyists’ formulae which were added to the copying of the text itself can be recognised. The first kind includes praise formulae marking the completion of the copyings. These were extremely common in all the zones, from the very early codices, and can be found in almost sixty percent of all dated manuscripts. What’s more, many copyists inscribed more than one completion formulae. These formulae were inscribed near the colophon, before or after it, and sometimes they are incorporated into it or attached to it. Indeed, in many printed catalogues these were counted as part of the colophon even when they were written separately, and they were usually printed as part of the colophon. The completion formulae display greater uniformity and less variety than other scribal formulae. Many are written in acronym form, and some are characteristic or particular to a certain region. As is the case with other formulae, the completion formulae in Italian manuscripts have unique, distinctive features.

245 In the early colophons in which the formula was adopted in the 13th and early 14th centuries, it does not appear in full.

כבודך ה — an Italian formula whose elliptical phrasing is so foreign to the Hebrew language that Steinschneider suggested already in the nineteenth century that it must be a translation from a foreign tongue.\textsuperscript{247} Indeed, similar formulae were common in Latin manuscripts in Italy.\textsuperscript{248} The completion formula (usually written after the colophon) was only used by Italian scribes and its distribution was greater than that of any other formula — it was inscribed in about one eighth of all dated Italian manuscripts.\textsuperscript{249}

Other formulae used in Italy appeared in fewer manuscripts, and furthermore, they were not unique to Italian copyists.

זברך נתן ליעף כח ולאין אונים עצמה ירבה (Isaiah 40:29, with the word ברוך added to the beginning of the verse) also appears as an acronym בנו'ך ואע'י and sometimes as a

\textsuperscript{247} Steinschneider, Vorlesungen, p. 47.

\textsuperscript{248} The following are a few completion formulae that Albert Derolez cites from colophons of Humanistic copyists: Deo laus et honor; Deo laus, honor et gloria; Deo laus, honor, imperium et gloria; cf. A. Derolez, ‘Observations on the Colophons of Humanistic Scribes in Fifteenth-Century Italy’, in Paléographie 1981: Colloquium de Comité International de Paléographie, Munich 15–18 September 1981, ed. G. Silagi (Münchener Beiträge zur Mediävistik und Renaissance-Forschung 32), Munich 1982, pp. 255–257. It is unclear whether these Latin formulae were used only in 15th century Humanistic manuscripts or whether they may have been used in earlier manuscripts as well. I have not found a Latin equivalent of the Hebrew formula among the formulae and variants in Reynhout’s book (above, n. 246). Indeed, in his Latin book on Hebrew incunabula, De-Rossi (J.B. De-Rossi, Annales hebraeo-typographici sec. XV, Parma 1795, pp. 12, 21) translated the formula printed at the end of Rabbi Levi Ben Gershom’s commentary on Job, Avraham ben Haim of Pesaro Press (Ferrara) 1476/7, as ad gloriam tuam, domine! (see a plate of the colophon page in A. Freimann (ed.), Thesaurus Typographiae Hebraicae saeculi XV, Berlin 1924–1931, A12) and at the end of the Tur Yoreh De’a, printed by the same printer in Ferrara, 1478/9 (should be: 1475/6). See the colophon plate in Freimann, \textit{ibid.}, A5,2). Peretz Tishby (‘Defusei–’eres [incunabula] ’ivriyim, B, Kiryat Sefer, 60 [1987/8], pp. 898-899 [in Hebrew]) noticed that this formula appears also in Rabbi Levi Ben Gershom’s commentary on the Tora, Avraham Conat and A.J. Ezraḥi Press [Mantua 1473/4-1475/6 or Ferrara 1476/7-1477/8] (see the plate of the colophon page in Freimann, \textit{ibid.}, A10, 2).

\textsuperscript{249} For quantitative data of this type, the calculation is not based on the corpus of all dated units, but on the colophoned units, except for units by secondary copyists. The occurrence of the formula in the Geniza fragment T-S A41.23 is unusual — the fragment is a parchment bifolium of non-consecutive folios from the final quire of a Book of Deuteronomy with the Masora. At the end of Deuteronomy (fol. 2r) the completion formulae were written in the Masora script: כבודך ה, ברוך ייעף בךифא נפשו; חזק הכותב וברוך הקורא (for the other formulae, see below). Although the dimensions of the bifolium are in the format of a very ancient type, the script does not appear to be ancient, and in any event it is Oriental, and this fact is puzzling. The damaged inscription (in a different hand) הז דפריסême ל...<... is merely an indicator of ownership, and not a colophon, as Davies believed, M.C. Davies, Taylor-Schechter Old Series and other Genizah Collection in Cambridge University Library (Hebrew Bible Manuscripts in the Cambridge Genizah Collection 1), Cambridge 1978, p. 210.
consecutive string בָּנָלְכָּאעֵי – the full formula is well known and widespread and it appears already in the earliest extant date Italian codex, and was also used in other zones. The formula appears in about ten percent of all manuscripts (although its use in Ashkenaz, proportionally speaking, was scarce). The distribution of the acronym form of the formula does not overlap exactly with that of the full formula. Its use in Ashkenaz was even more restricted, the Oriental copyists did not adopt it, and it appears in a late period, and nearly always in manuscripts copied by immigrants. The two forms of the formulae make it the most frequent scribal formula (Italy included): as aforesaid it appears in about a fifth of all dated manuscripts.

ברוך ה' לעולם אמן ואמן (Psalms 89:53) and its later acronym בָּנְלָאֵי י' הַעְלֶמֶנָא אָמְנָא – in its full form this is one of the earliest formulae, appearing already in Oriental manuscripts from the eleventh century. Until the final quarter of the thirteenth century, the full formula was used only in the Orient, and later spread to other zones, but its use in Ashkenaz was scarce, and in Byzantium, limited. The acronym form, first found in a Sefardic manuscript from 1284, appears mostly in Spain, especially in the fifteenth century, and is absent from Ashkenazic manuscripts. Its infrequent occurrences in the Orient (where the full form emerged) and in Italy come from later manuscripts, almost nearly written by Sefardic immigrants.

Of the many other formulae, some of the more common ones will be presented:

בריך רחמנא דסיען מריש ועד כען – the full formula appeared as early as the twelfth century in the Orient, and

...
spread to some degree throughout all the zones. In the fifteenth century, Sefardic and Byzantine copyists sometimes inscribed the completion formula in acronym form: 

ברוך ידוהי חלול

and in full form

לעבדריה בר אמתיה

(‘Blessed is he who grants might to his servant son of his maidservant’, in Aramaic)\(^ {254}\) – a less common formula than the previous one, occurring from the fourteenth century onward, scarcely in the Orient and in Ashkenaz, and even less frequently in full form.

חזק ונתחזק, הסופר לא יזק, לא היום ולא לעולם, עד שיעלה חמור בסולם, אשר יעקב אבינו חלם

\(^ {255}\) – a unique and droll formula that was common in Ashkenaz where it emerged. Frequently the scribe inserted his name in the rhymed formula (‘the scribe so-and-so son of so-and-so will not be harmed’) and thanks to this custom the names of many scribes who did not inscribe a colophon at all are known to us. The foundation for this completion formula is the brief phrase חכם ונתחזק, which was customary in Ashkenazic and Sefardic manuscript from the first decade of the

\(^ {254}\) In a number of catalogues of small manuscript collections, the formula caused confusion to the compilers, who believed it to be the name of the scribe, and recorded it as Obadiah ben Amitai.

\(^ {255}\) Cf. Zunz, Zur Geschichte, p. 207; Zunz, Gesammelte Schriften, pp. 77-78; Berliner, ‘Ein Gang’, p. 94. Zunz already pointed out parallels (and perhaps sources) of this formula pattern in medieval proverbs, and Berliner commented further on the matter. See also Steinschneider, Vorlesungen, pp. 48-49 (and in Hebrew translation, supplements by A.M. Haberman, p. 133), and esp. A. Altman, “The ladder of Ascension”, in Studies in Mysticim and Religion Presented to Gershom G. Scholem on his Seventieth Birthday, Jerusalem 1967, pp. 1-32. The proverb that is most similar to the copyists’ formula is א哪家 תאיר ביום תימן תימן, which appears in Pirke Rabbenu haQadosh and in several variants of this source, in works such as Midrash Ma’ase Tora (‘המשנה החכמה בכסילים <צ’ל: בכובסין, ואת גם בחידושי הר”ן’) and see the studies cited above. R.N.N Rabbinowicz claims that ‘the source of the phrase is in the aggada cited by Rabbi Nissim Gerondi in his novella on B. Hullin, 62b’ (Variae lectiones in Mischnam et in Talmud Babylonicum, 2, Munich 1868/9 at the end of the unnumbered appendix). In fact, Gerondi cites Nahmanides: ואמרו באגדה אם יעלה חמור בסולם תמצא דעת בסכסין <צ’ל: בכובסין, ואת גם בחידושי הר”ן> assim. אומר באגדה אם יעלה חמור בסולם תמצא דעת בסכסין (Nahmanides’ novellae on B. Hullin 62:1, Jerusalem 1929, fol. 76a).

It appears, then, that Nahmanides cited Pirke Rabbenu haQadosh or a text descended from it. See also the sources cited by J.L. Zlotnik (Avida’), Midrash haMelitsa ha’ivrit, Jerusalem 1939, pp. 62-64 (in Hebrew) (including, among others, Mahberot Immanuel by Immanuel of Rome). In the entry חמור לע הימים, see G. Alkoshi (Thesauroes proverbium et idiomatum Latinorum)\(^ {2}\), Jerusalem 1981 [in Hebrew], p. 54, n. 180: Asinus in tegulis) cites an example from Taḥkemoni by Yehuda Al-Ḥarizi. Yet still more: הוא אין חמור לע הימים (Y. Toporowski edition, Tel Aviv 1952, p. 32, and similarly elsewhere).
thirteenth century. However, already in 1226/7, the formula appeared in Germany in its developed form, albeit without the amusing ending:

The surprising ending

('until a donkey climbs the ladder’) without the final rhymed verse

Evidence that the copyists treated the formula as humorous can be found in their practice of producing playful variants of the donkey. Already in 1286 an Ashkenazic copyists substituted a cow for the donkey. In another manuscript, written in France a few years later, in 1290, the ‘cow’ version is given with an added verse:

From this point onwards copyists placed an entire menagerie of beasts on the ‘ladder’ as substitute for the original donkey – an elephant, camel, ox, mule, wild ass, and even edibles such as broiled venison, a macaroon, fish, and more.

Alexander Altmann hypothesised that the mysterious source for the derisory remark regarding the donkey climbing the ladder was an anti-Muslim polemic, because it alludes to the Mohammed’s nocturnal ascension on Buraq (the celestial horse) from the mosque in Mecca to a more distant mosque. At a later date, this distant mosque was identified with the location of the Temple in Jerusalem, from which Mohammed rose to the seventh firmament in the presence of Allah. However, the fact that the

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256 MS Oxford MS. Loud. Or. 271 (Neuabauer Catalogue 1206). Ashkenazic copyists created other rhymed closing verses, as their linguistic talent allowed, e.g. fonts. Cf. Manuscrits médiévaux I, 4.

257 MS Moscow Guenzburg 15 fol. 164v. The scribe did not preface the blessing to his name. Eventually another hand completed it underneath the colophon and added the ending:

258 See Manuscrits médiévaux I, 10.

259 See Altman (above, n. 255), pp. 1, 31-32.
transformation of the epigrammatic source into a completion formula, as well its broad dissemination, occurred in France and Germany, which had never encountered Islam, appears to suggest that the formula was devoid of polemic intent. The variations on the donkey clearly demonstrate the obvious, that even if there were a polemical echo, the copyists were at any rate not at all aware of it.

The following is a selection of additional formulae.

 הודעה ו톨 של הכותב (or: ואמוץ) – The first extant example of this formula is from the earliest complete codex whose date is not doubtful, which was written in the Orient in 916, after which it spread throughout all the zones, especially in Italy and Byzantium.

 ישמח הכותב ויגל הקורא – Although this formula is evidenced in abbreviated form already in the tenth century in the Orient, it was especially frequent among Sefardic copyists both in the zones of Sefardic book culture and in Italy.

 והמל של הכותב אל כל עולם – and in acronym form ממשי, and expanded versions, especially תהלה לאל עולם, and in acronym form תל”ש – the ‘glory’ formulae were quite widespread. The first surviving examples are from Italian manuscripts from the last quarter of the thirteenth century, and from Italy they spread especially to Spain, where the formula תם והמל התהלה לאל עולם was a favourite; a few have also survived from Ashkenaz. The acronym ת”ל was used only in Italy.

 ושלום ושלום בורא עולם – it is surprising that this well-known formula was found in only a few manuscripts.

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Five completion formulae at the end of a copying.
San Severino (Italy), 1427
MS Paris, Hébreu 816, fol. 122v

260 See Codices hebraicis, part I, ms. 3.
Opening formula

These scribal formulae are unrelated to the colophon, but have a symmetrical relationship with the completion formulae. Just as the copyists concluded their work with blessings of praise to the Creator, self-encouragement, and well-wishes, they would write opening formulae in the same spirit, at the beginning of the copying at the outset of their labour. In the corpus of dated manuscripts, manuscripts containing scribal opening formulae are fewer than those containing completion formulae, but it must be recalled, that by its very nature, this corpus contains manuscripts (or works) with endings that include colophons, but which do not necessarily have the beginning of the copy. That said, opening formulae exist in about a fifth of the dated colophons from the beginning of the eleventh century and onwards, in all zones, but with greater frequency in Italy.

[וּרְאוּ יְהוָה, יְהוָה אֱלֹהֵי אֲרוֹרָו] (Psalms 121:2) was the most frequent formula, used in almost half of the manuscripts with an opening formula since the first extant manuscript with this formula, which was written in Turkey in 1203. It occurs in all zones, especially in Italy, and to a lesser degree in the Orient (but never in Yemen).

In the Middle Ages the tetragrammaton is represented by the letter yod (י) and not by the letter he (ה). Sefer Ḥasidim, a source that is replete with information about book craft and scribal craft in Germany, includes a section that mentions this formula, and, in typical manner, condemns the practice: חכם אחד ראו ספר שכתב בתחלת הספר בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו, ושאלו חכם: מה בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו, מה בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו? אמר להם חכם: בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו, והלך חכם לכתב ספר אחד, וכתב בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו, והלך חכם לכתב ספר אחד, וכתב בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו, והלך חכם לכתב ספר אחד, וכתב בֵּשָּׁם יִהְוָה אֱלֹהֵי אֲרוֹרָו. The book in question was presumably a Bible, for, as mentioned earlier, in Sefer Ḥasidim, the term ספר unqualified refers to the Bible, and this would explain the prohibition against adding to it.
ב"ה – an acronym of בָּשָׁם הָשָׁם in the expanded formula was another derivative of the basic formula, but because the acronym בָּשָׁם הָשָׁם – ‘with Heaven’s help’ – was also used alongside it, the former should perhaps be deciphered as בָּשָׁם הָשָׁם – ‘with God’s help’ – although this interpretation is unsupported by evidence. Both acronyms were used nearly exclusively by Sefardic copyists in all zones, who inscribed them (especially the ב"ה formula) not only at the beginning of the copying, but also at the beginning of the manuscript’s quires.

בֵּטְבּוֹב גְּדוּ לָא חָיָיוּל דָּא (I begin this with good fortune) or בֵּטְבּוֹב/בֵּטְבּוֹ בָּטְבּוֹ – this formula was less common, and it was more frequent in France (where it first emerged) and in Germany. Ashkenazic copyists used the formula from the end of the thirteenth century and during the fourteenth century almost exclusively. Apart from Ashkenaz, the formula was used sparsely in Spain and in Byzantium but not in the Orient. In Italy it was mostly used by Ashkenazic immigrants and in a minority of cases by Sefardic immigrants.

אַסָּא יְהוָה נָא, אַסָּא יְהוָה נָא or in the full form of the liturgical phrase אַסָּא יְהוָה נָא – this formula was even less frequent and was used especially in Italy.

Apotropaic wishes at the bottom of the page
In Hebrew manuscripts it was a common practice, which as far as we know developed only among Hebrew copyists, to inscribe wishes in a minute script here and there in the lower margins of the pages, sometimes in acronym form. These inscriptions are usually parts of Biblical verses or their acronyms. Although positioned at the very bottom edge of the page and written in minute writing, the phenomenon was widespread, and it can be observed, or at least its traces can be discerned, in around eleven percent of all dated manuscripts, in all zones except for the Orient. What these formulae have in common is that they all refer to the text of the final line of the copied text. If a page ended with condemnatory language or with a verse concerning divine punishment and calamity, many copyists would erect a shield, as it were, against such words by adding a supplication or a prayer, usually citing a Biblical verse.

264 Apart from a few manuscripts written there in the 16th century by exiles from Spain.
source, which presents an antithesis to the phrase appearing at the end of the page. The custom is reminiscent of the custom of recopying verses of comfort to biblical books that end with promises of catastrophe.\textsuperscript{265}

The rather common practice of protecting against the disasterembedded in the copied text by inscribing a counter-text to counteract them was not mentioned in nineteenth century studies by Wissenschaft des Judentums scholars who engaged extensively in the discovery and interpretation of manuscripts, but it was already described in \textit{Sefer Hasidim} at the turn of the twelfth and thirteenth century:

כשሸפמארע באלחמביבךحرف

א всяк פפר ששבהפורעךלאמכחבתא

The prohibition of this custom by \textit{Sefer Hasidim} is of one piece with the prohibition and condemnation of other scribal customs, which we have already discussed above, the purpose of which was to diminish the scribe’s personality and curtail his intervention in the copied text. This prohibition too, which accords with the ethical teachings of Ashkenazic piety, proves of course that the custom had already spread to Germany at that time. Indeed the earliest dated manuscripts containing such prophylactic formulae are the earliest extant Ashkenazic manuscripts, written in the final quarter of the twelfth century.\textsuperscript{267} Such formulae, meant to prevent punishment or inoculate against it,

\begin{footnotes}

\textsuperscript{266} Wistinetzky and Freimann edition, passage 705, p. 183 = Sefer Hasidim, MS Parma, p. 136. The first, and seemingly the only one to notice this practice was R.N.N Rabbinowicz in the introduction to his monumental work \textit{Diqduqei Sofrim} (\textit{Variae lectiones in Mischnah et in Talmud Babylonicum}, vol. 11: Baba Batra, Munich 1868/9, p. 14); when describing MS Vatican Vat. ebr. 111, he notes: עם לך 국민 ומלאך נישא¶ רчик הכתוב בעץ למטה גלילין מילים של דרך. See E.E. Urbach’s comment in his supplement to my article (above, n. 263).

\textsuperscript{267} The oldest dated Ashkenazic manuscript is also the earliest manuscript in which the custom is apparent; it is part of the Florence manuscript of the Talmud from 1177 (MS Florence, Bib. Nazionale Magl. II-1-7, pp. 127-333), in which wish formulae can be seen at the bottom of two pages, although a few of them have been cut off, see \textit{Codices hebraicis}, Part IV, ms. 79. Other early manuscripts in which evidence of this custom survived are Ashkenazic manuscripts from the last quarter of the 12\textsuperscript{th} century – a grammatical manuscript written in 1188/9, apparently in France (see \textit{Codices hebraicis}, Part IV, ms. 84) and a biblical manuscript from 1193 (\textit{ibid.}, ms. 91). Evidence for the prevalence of this custom already in the mid-12\textsuperscript{th} century is found in an unexpected source – a bilingual English manuscript, the Book of Psalms in Hebrew and in Latin, which was formerly kept at St. Augustine in Canterbury and was rediscovered in the library of Leiden University (MS Leiden, University Or. 4725). There is no doubt that the Hebrew text was written, in a somewhat artificial hand, by a Christian copyst, and nonetheless the margin of one of the folios includes an apotropaic wish formula (just as other scribal practices used by Hebrew scribes at the end of lines were adopted, e.g. the use of line
\end{footnotes}
appear first in Germany and France, in the margins of texts of all genres. In the thirteenth century, the custom spread to Spain and Italy. In Italy, the practice was even more widespread than in the zones of France and Germany, where it may have emerged: as opposed to 15% of dated Ashkenazic manuscripts in which apotropaic wishes occur in the margins (20% in the thirteenth century), 18% of Italian manuscripts (and in the fourteenth century -- 32%!) contain them. The practice was known but uncommon in Byzantium. It was employed in text of all types, and even in translated scientific works.

The following are a few examples. MS London, Ar. Or. 51, fol. 177r – one of the earliest dated Ashkenazic manuscripts, written in 1188/9, apparently in France – ends with the words בַּשַּׁבַּעַת קֶסֶף הָסְדָּרְתָּה פָּנִים (Isaiah 54:8), and at the end of the page, in a cursive script, there appears the addition לְשֻׁעַת קָוהִית לְלֵוִי (Genesis 49:18). Fol. 138v, presents an even more conspicuous example, but this seems to be an exception, and possibly a unique occurrence. Here, we encounter the reverse – the condemnatory language appears in the page’s first word מקללני and therefore the copyist countered it by writing מברכני in large square letters in the upper margins.

As noted, most of the apotropaic wishes are comprised of biblical citations, sometimes only in acronym form. They make extensive use of prophylactic verses warding off death. The most common formula is the verse לא אموت כי אחיה ואספר מעשי יה (Psalms 118:17), which also appears as an acronym. All the pages in which this verse is written in the margins contain at the end of the page words deriving from the root ‘to die’ or semantically related words. Another example of a formula of this type is ארך חיים שנות חיים וי”ל (based on Proverbs 3:2), mentioned above as one of the rare blessings for the living. Another is היותי 모みなו

fillers and anticipating the following word, practices unknown in Latin manuscripts). See Beit-Arié, Makings, p. 131, 135, n. 46 (and see. ibid. n. 45, for examples of such wishes in other bilingual manuscripts produced in England, most likely in the 1230s); Beit-Arié, East and West, p. 110, n. 48 and the plate on p. 19, in which the wish formula אֵלֵי קְנָא יָה יִתְכָּלְמָה יְשׁוּפָה לֶב (which is slightly cut off at the base of the letters) at the bottom of fol. 43v, where the copied text ends with the words וַדְבַּרְכָּה נְאָשָׁה, from Psalms, 109:3. It would seem that this wish echoes Psalms 118:7 יִתְכָּלְמָה יַרֵךְ לֶב – but this hypothesis cannot easily be reconciled with the “Christian” writing of this copyist. However, it may be that he was a convert who had converted many years earlier. Such a hypothesis might explain the puzzling occurrence of other Hebrew scribal customs in his copying. For examples, see my article, ‘Copyists’ formulas at the bottom of the pages’ (above, n. 263), p. 550 (in Hebrew).
(based on Hosea 6:2), as well as (Isaiah 25:8), and other similar phrases.

In MS Oxford MS. Poc. 108 (Ibn Ezra’s commentary on the Tora, Fano, 1431), fol. 26v ends with the lemma (from the verse [Genesis 14:1]), and at the end of the page, under the catchword, the scribe added the verse יפל מאבד (Psalm 91:7).

Other verses were selected and matched against other words of punishment or condemnation. The verse רפאיי היה ארפא (Jeremiah 17:14) was written by a copyist at the bottom of a page where the word ה巴拉ים appeared in the last line, and again on a page ending with the word שגפם (Psalm 146:8), in the margins of a page containing the word הגלות.

Similar to this copyist’s practice was that of another scribe in Italy who in 1456 copied a mahzor for the high holidays in the Catalan liturgical tradition. He too, and also the vocaliser apparently, frequently inscribed blessings (especially biblical verses) meant to render impotent the threats of punishment, but the verses were written in acronym form, e.g., to counter חלל ושביה (Deut. 32:42) he wrote שחאהאל”י (i.e. שפך חמתך על הגויים אשר לא ידעך, Jeremiah 10:25), to counter אם ירדתי ממדרגות גבהים, he wrote יז”כ (י’ זקף כפופים, Psalms 146:8), to counter ומכמרת יפרשו לו וחרמים, he wrote במ”א (most likely representing ברוך מתיר אסורים, Psalms 146:7).

In a few manuscripts, copyists wrote blessing formulae or supplications for protection that do not have a biblical source. For example, in the margins of a page ending with the words בעירת אש השם, the copyist wrote הצלינו מאשך הגדולה (cf. Deut. 4:36).

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269 This wish formula was written in MS Oxford MS. Opp. Add. fol. 10, fol. 139r, although in the final line a statement negating death appears – שלא ימות אביהם. In other words, the very occurrence of a word signifying calamity compelled the copyist to erect a shield against it, regardless of its context.

270 MS Oxford MS. Opp. 213, fols. 39v, 55v.

271 See in detail my above-cited article, ‘Copyists’ formulas at the bottom of the pages’ (above, n. 263).

272 See. ibid., p. 551.
A late copyist writing in 1538 on the island of Provato, near Turkey, inscribed the formula רוחמה ליצלך, whenever a page ended with descriptions of punishment.273

Wishes accompanying dates in colophons
Sometimes colophons contain wish formulae – whether blessings or imprecations – that accompany the indication of the date. The custom was quite widespread in the Middle East, and in particular in Yemen, but was rare in Spain, Italy, and Byzantium. In Ashkenaz it was not in practice at all.

סימן טוב לכל יהושע – the earliest formula in the Orient, appearing for the first time in 1002/3, but later written especially as סימן טוב alone, with no additions (in 1192, we find the full wish formula in Byzantium as well).

תיהרס מהרה – a wish accompanying the mention of the year according to the Muslim calendar era, which, as mentioned earlier, was named קרן זעירה. This formula occurs in twenty manuscripts in Judaeo-Arabic from the twelfth century until the end of the Middle Ages (especially in Karaite manuscripts, some of which were written by the same scribe).

ישע יקרב, ישע יקרב ששון יערב – the abbreviated formula appears for the first time, apparently, in Aden in 1222 (the second word was not preserved), but was more frequent in its rhymed, expanded version (sometimes as a completion formula). It was used for the first time by head of the scribal family, Benaya ben Sa’adia in 1460/1, and following him, by his scribal descendants.274 In Spain, the date is accompanied by the brief wish formula ישע יקרב only in a few manuscripts written in Toledo between 1222 and 1300, and similar formulae were found only on rare occasions in the Orient. The formula was also included in a manuscript written in Lisbon in 1482.275

לכלות הפשע ולקרב הישע – this personal rhymed formula, which grew out of the formula ישע יקרב only, was joined to the date in eight of ten colophons written by the prolific copyist and author Sa’adia ben David Adani of Yemen (Sa’id ben Daud al-‘Adeni) who was active in Palestine and Syria in 1465-1485.276

לישועה קרובה – a similar wish to ישע יקרב, which sometimes accompanied the indication of date in Yemen in the fourteenth and fifteenth centuries.

273 See. ibid., p. 552.
274 MS London Or. 2370.
275 MS London Or. 2626-8 (Margaliouth Catalogue 62).
276 See Manuscrits médiévaux, I, 100.
A formula that accompanied the date in a few Yemenite manuscripts from the fifteenth century. The acronym for the formula, "ל"א תבנה מברחה," was used in Italy in the fifteenth century, and in a few Italian colophons the formula appears in full.  

Blessing and imprecation formulae accompanying the indication of locality in colophons (988/9), (1035), (1035) are formulae accompanying the indication of locality in a number of colophons written in Jerusalem. In the Orient no other blessing formulae concerning localities exist, except those referring to Jerusalem. However, in Yemen, in many manuscripts from the fourteenth century and especially from the fifteenth century, it was customary to inscribe formulae indicating a time limit until the rebuilding of Jerusalem, or wishes of destruction alongside wishes for the reconstruction of Jerusalem. Here are a few examples: 

תשתכלל עד תתבני ירושלים, תשתכלל עד תתבני ירושלים תשתכלל עד תתבני ירושלים, תשתכלל עד תתבני ירושלים תשתכלל עד תתבני ירושלים on the one hand, and on the other. The antithetical form of the formula is found for the first time in 1248 במדינת אלטוילה תסד ירושלים תשתכמה. However, some twenty years later, a scribe using the formula in the same place, toned down the formula and wrote: תתקיים עד דתתבני ותשתכלל קדרותא דביתא ירושלם. 

In the West, one blessing formula, with variants, accompanied the indication of locality in a small number of manuscripts from Spain, Provence, and Portugal, in the fourteenth and fifteenth centuries:

277 The formula appears in full for the first time in MS Moscow, RSL Guenzburg 81, which was written in Forcia in 1432. 
278 Apart from the identical formula which accompanies the name of the locality (Egypt?) in MS Paris Hébreu 580, which was written between 1217 and 1277 (the letter representing the tens/decades according to the Era of Contracts was damaged). 
279 Manuscrits médiévaux, I, 91 (and similarly ibid. I, 72) 
280 ibid. I, 81. 
281 See below, n. 284. 
282 Manuscrits médiévaux, II, 32 (see the photograph of the colophon, ibid.) 
283 MS Moscow, RSL Guenzburg 563, written in 1369. 
284 i.e., will be destroyed and become desolate, according to the Aramaic translation (Targum Jonathan) to the Song of Hannah, I Sam 2:5, which alludes to Rome. 
285 See e.g. Manuscrits médiévaux, I, 124.
From the long colophon of the magnificent Bible that Elisha ben Avraham ben Benveniste, also known as Crescas, copied and decorated for himself over many years, completing it in 1382, undoubtedly in Mallorca. MS Sassoon 368 (microfilm in the Institute of Microfilmed Hebrew Manuscripts, National library of Israel F 8894). The scribe-illuminator should apparently be identified with the illustrious cartographer Cresques Avraham (according to Catalan convention, the name means Crescas son of Avraham), of Mallorca, who worked in the service of the kings of Aragon. See K. Kogman-Appel, “Elisha ben Avraham, Known as Cresques”: Scribe, Illuminator and Mapmaker in Fourteenth-Century Mallorca’, *Ars Judaica*, 10 (2014), pp. 27-36.

286 MS Moscow, RSL Guenzburg collection 27.
287 See e.g. *Manuscrits médiévaux*, I, 43.
Chapter 3: Writing Materials

The material of which the writing surface is made, and the characteristics of the material, are of course the initial and most basic component affecting the book’s production and visual appearance. During the period of the Hebrew codex, as evidenced by its medieval survivals, only two types of writing material were in use – parchment, made of the skins of domestic animals (calves, goats, and sheep), and paper, for which linen rags chiefly provided the raw material (and later in the Middle East also cotton); in other words, material derived from an animal source versus material from a vegetable source in secondary use. In the early period of the Greek and Latin codex in the Middle East, copyists still used papyrus made of papyrus reed as the main writing material for books in scroll form, until parchment, which due to its flexibility and the possibility of writing on both sides was more suitable for the codex form, gradually came to be the standard writing material.¹ Subsequent to the period of Hebrew books in scroll form found in the Judaean Desert, nearly all of which were written on skins,² a few Hebrew papyrus fragments have survived, mostly documentary texts from the Byzantine period, and nearly all of them are not fragments from books in the codex form.³ Therefore the two materials whose traits and appearance must be described and characterized are parchment, used already prior to the Middle Ages, and paper, the more recent writing material, of which the secrets of production were discovered and imported from the Far East to the Near East no

¹ There is no doubt that the transition from the scroll form to the codex form is correlated to a shift from the use of papyrus as writing material to parchment; however, it is clear today that the shift from scroll to codex was not dependent on the writing material. This has been demonstrated by Turner’s study, Early Codex, pp. 35-42, 89-135. Turner comprehensively examined the remains of early Greek, Latin, and Coptic codices, which prove that the use of the codex form predated the shift to parchment, and during the first centuries of the appearance of the codex, papyrus and parchment were used coterminously.

² Unlike the documents found in the Judaean Desert, which were written on papyrus; see Tov, Scribal Practices, p. 31. Only a few copies of literary works were written on papyrus, and Tov suggests that these may have been private copies (cf. ibid, p. 32).

³ See above, chapter 1, section 1, subsection on ‘The diffusion of the codex and its late adoption by the Jews’. A unique finding is a surviving fragment (from the Cairo Geniza) of a Hebrew codex made of papyrus (MS Cambridge T–S 6H9-21), which contains the liturgical poems of Yosef ben Nissan of Sheve Kiryataim (See Sirat, Papyrus, pp. 67-80, and the identification of this text by Ezra Fleischer, ibid., pp. 69-70).
earlier than the mid-eighth century. A writing material named נייר (paper) is indeed already mentioned in the Mishna and in talmudic literature, but the term referred to papyrus, as Rashi already astutely explained. The papyrus of the ancient world and medieval paper shared one trait in common – their origin in a plant-based material. Papyrus was made from strips of papyrus reed and paper, mainly from reused remains of cloth and worn out garments, and therefore the use of the older term was updated to refer to the new plant-based material, a process paralleled in European languages. It should be stressed that the use of the skins of calves, sheep, and goats for writing scrolls was standard among Jews at around the time of the canonisation of the Holy Scriptures, and most of the Judaean Desert scrolls plainly demonstrate this. The writing material in this case was not parchment, which is a skin processed on both sides, but rather gevil, a skin processed for writing only on one side, as the scroll form required.

4 The development of research on writing materials, both parchment and paper, and of their technological means, is reflected in Maniaci & Munafò (eds.), Book Materials and Techniques.

5 In Pesahim, ibid., Rashi adds: "הקול של עשבים" (in French glud, see Catane, Gloses, no. 295, and many more). See M. Catane, 'Le monde du livre au temps de Rachi', Proceedings of the Seventh World Congress of Jewish Studies, vol. 4: History of the Jews in Europe, Jerusalem, 1981, p. 9-15 (in Hebrew). Its seems that ISAIAH BEN MALLI DI TRANI OF ITALY (1180?–1250) was the first halakhic authority and commentator who identified the talmudic term with the medieval product manufactured by the Arabs before it was manufactured in Christian Europe. He disagreed with Rashi’s interpretation and noted: "ודאי שנייר הוא זה הבא מארץ ישמעאל, אבל אינו נעשה מעשבים כדפירש המורה, אלא מבלואי בגדים וחבלים עושין אותו, והוא חלק ונאה לכתיבה ואינו יכול להזדייף" (Sefer ha-hamakhria', ed. S.A. Wertheimer, Jerusalem 1998, p. 532; this source was brought to my attention by Simha Emmanuel). This is the first Jewish source that mentions the production of Arabic paper and its raw materials. For a similar identification and similar information by Menahem ben Shelomo Me’iri of Provence about half a century later, see below, n. 66. Cf. the references in the research literature and other arguments in favor of identifying נייר in talmudic literature with papyrus sheets presented by S. Naeh in his article: 'Qaryana de-'igarta: he’arot la-diplomatiqa ha-talmudit' (above chapter 1, n. 30).


8 See below, section 1, 'Parchment'. For the halakhic requirements regarding the writing of Tora scrolls on gevil, see below in the text referenced by n. 26 and in the note. Early halachic authorities cite Hai ben Sherira Gaon. E.g. 'Or Zaru'a, I, Hilkhot Tefillin, section 540: "וכי כן אמרה התורה כי כל שמה של כתיבתו יכתב על פי חומץ, עד שהרי חומץ אחד אף על פי חומץ אחר ההוא לעולם לא יכתוב ההוא". B. Bava Kama 4a–b. For the use of skin in most of the literary works among the Judaean Desert documents, see Tov, Scribal Practices, p. 33-36. Tov calls the writing material skin. Mordecai Glazer, ('Aleppo', pp. 185-
As mentioned, the use of parchment or skin predated the use of paper as writing material by centuries. Knowledge of paper production developed in China, but as this knowledge spread within a few centuries in the Muslim lands, and within a much longer time span also in the lands of Christian Europe, paper replaced parchment as the main writing material. In Hebrew book production (as in non-Hebrew book production) the transition from writing on expensive and durable parchment to writing on paper, the material that was cheaper\(^9\) and more vulnerable to damage, reduced the costs of book production and therefore contributed to the widening distribution and use of the book. The transition within the Muslim lands was much speedier than in the Christian lands after the late start of local paper production in those regions. In the lands of Muslim civilisation initially, especially in the Middle East, and at a slower pace also in North Africa and Spain, paper was quickly adopted for the copying of Hebrew books and became the standard writing material, while in the countries of Christian Europe (except for Byzantium), parchment was replaced by paper only in the late Middle Ages. In the Middle East, Arab-produced paper was used as the standard writing material for books in the Hebrew script as early as the eleventh century, from 1005 onward, the earliest date from which a fragment in the Cairo Geniza of a dated codex made of paper in a Hebrew script survives.\(^{10}\) The earliest

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\(^{9}\) This was clearly not the case during the first period of paper production, certainly not in Europe – the price of paper in Bologna in 1280 was six times the price of parchment! See Briquet, *Filigranes*, vol. 2, p. 317. But Stevenson, one of the most important researchers of watermarks embedded in Occidental paper, and the editor of a new edition of Briquet’s corpus, claimed that when paper first began to be produced in Italy its price was almost the same as that of parchment. And yet, paper continued to be expensive, and in the fifteenth century, before the invention of print, the price of one or two paper quires was more than a regular laborer’s daily wages. See A. Stevenson, *The Problem of the Missale Speciale*, London 1967, p. 49. All researchers rely on Blum (who also wrote books on the history of clothes), who argued that paper became cheaper (and its production accelerated) when cloth replaced wool as clothing material (especially for underclothes) in Europe, a fact that led to a great increase in the availability of the material of which paper was made (rags). See, A. Blum, *Les origines du papier, de l'imprimerie et de la gravure*, Chartres 1932 (reprinted Paris 1935), pp. 34–35, 62–63. And cf. Briquet, *Opuscula*, pp. 36–39.

\(^{10}\) MS Cambridge T–S 8 Ca 1 (*Codices hebraicis*, Part I, ms. 15). From about that time, a Karaite paper manuscript in an Arabic script written in Ramle in 1004/5 containing the Book of Ruth and Canticles in Arabic transliteration with a commentary by Japheth ben Eli has survived; a damaged but nearly entire paper corpus written in Fustat in an adjacent year (1006) has survived in MS St. Petersburg Евр.–Араб. I 4520 (*Codices hebraicis*, Part I, ms. 16). The earliest Hebrew documents written on paper predate the codices. To the best of my knowledge, these are three Geniza folios that have survived from the ledger of engagements and marriages of the Babylonian community in Damascus, from 933: MS Cambridge T–S 16.181, T–S AS 146.66, T–S NS 320.108; and see M.A. Friedman, *Jewish Marriage in Palestine*, vol. 2, Tel-Aviv–New York 1981, nos. 53–55, pp. 396–439 (with references to earlier publications). The earliest Hebrew script found to date on paper – not of the Arabic type, but rather Chinese paper –
dated Arabic manuscript discovered to date was produced on Oriental paper in 233 to the Muslim Era (848 CE). Only twenty-eight dated Oriental codices written on parchment in a Hebrew script have been documented, and they represent only 28% of 353 dated Oriental manuscripts before 1500. These twenty-eight manuscripts, many of them fragmentary, were all produced before 1327, and most of them contain biblical texts (only two eleventh-century non-biblical Geniza fragments are known). It should be noted that fragments and parts of undated biblical codices written on parchment, most of them early, have survived in the Geniza, and most of them are kept in the Firkovitch collection in the National Library of Russia. The use of parchment decreased significantly also in Arabic manuscripts written in the Orient after the tenth century. Of all the dated Hebrew manuscripts surviving from Yemen the ratio of parchment codices comes to 13 percent. Of these, six unfragmented manuscripts have survived (five deal with halakhic matters, and four of them contain Maimonides’ Code and one biblical codex), and they date from the late thirteenth century to the first third of the fourteenth century. The remaining eight surviving parchment manuscripts are entirely biblical and their dates range from 1473 to 1490. In Yemen parchment continued to be used also into the first decades of the sixteenth century.

The ratio of the parchment manuscripts within the entire corpus of dated Hebrew manuscripts up to 1500 is 43%. In the Sefardic zone it is 36% (84% in the thirteenth century, 46% in the fourteenth century, 22% in the fifteenth century); in Ashkenaz – 82% (100% in the thirteenth century, 98% in the fourteenth century, 51% in the fifteenth century); in Italy it is 59% (98% in the thirteenth century, 82% in the fourteenth century, 51% in the fifteenth century); in Byzantium it is 14%; and in the Orient, as mentioned above, it is only 8%, and in Yemen 13%. The choice writing material – the expensive, prestigious, and handsome parchment or the cheap and is, apparently, a letter in Judaeo-Persian discovered in Khotan (Chinese Turkistan). A microscopic examination of the paper has determined that it was produced between 751-796, although the text attests to an earlier date, circa 718. See D.S. Margoliouth in collaboration with M.A. Stein, W. Bacher, A.E. Cowley & J. Wiesner, ‘An Early Judaeo-Persian Document from Khotan in the Stein Collection with Other Early Persia Documents’, Journal of the Royal Asiatic Society (1903), pp. 735–760. For a photograph of this document, see Birnbaum, Hebrew Scripts, no. 211.

11 The manuscript containing the work Saḥiḥ Muslim, is kept in the Regional Library of Alexandria. To the best of my knowledge, the existence of this paper manuscript is not mentioned in the research literature. I came across the knowledge accidentally when visiting the library in 1979. For sources on Arabic paper manuscripts from 813 (apparently) onwards, see Zohar Amar, (‘Paper Industry’, p. 77, n. 77). On the earliest dated Armenian paper manuscript see, A.S. Matevosian, ‘Drevneiskaia armianskaia rukopis’ na ‘bumage’, Pamiatniki kul’tury. Novye otkrytia. Pis’memnost’. Issusstvo Arkheologiia, Ezhegodnik 1976 (Moscow 1977), pp. 7–11 [according to IPH Information, 15 (1981), p. 104].
fragile paper – was also dictated by the economic capability, financial constraints, and social needs of those who commissioned the copies, or who copied books for their own use, or of their societies, but it was also dictated by the purpose of the text. Certain genres – Bibles, prayer books and mahzors and to some extent halakhic (legal) corpora – were copied on the more durable and dignified parchment even after the use of paper had spread, both because they were intensively used and because of the contents. Classification of the writing materials according to the destination of the produced books does not show that commissioned copies produced on parchment were greater in number than self-produced copies produced in the same manner (in the group of self-produced copies, we also included, in keeping with our approach, copies in which the destination was not indicated in the colophon). And yet, most of the copyings produced on paper were self-produced. That said, this classification is only useful concerning manuscripts from specific areas in specific periods. There is no point, of course, in applying it to Oriental manuscripts generally because of the widespread adoption of Arabic paper in this zone, nor should it be applied to Byzantine manuscripts, because very few dated parchment manuscripts have survived from this zone. In Ashkenaz, as noted, the use of paper was exceedingly rare until the fifteenth century, and in Italy was scarce until then, and therefore in these zones such a classification of manuscripts is meaningful only in the fifteenth century. In the Sefardic zone, on the other hand, classification according to this criterion is useful beginning in the fourteenth century thanks to the early spread of the use of paper there. The ratios of commissioned copies and of self-produced copies made on parchment in Spain during the fourteenth century are similar, but most of the paper copyings there were self-produced. In the fifteenth century, slightly more commissioned manuscripts than self-produced manuscripts were written on parchment. During that time, the number of commissioned paper manuscripts was greater than that of commissioned parchment manuscripts, but some half of all Sefardic manuscripts in the fourteenth and fifteenth century were self-produced paper copyings. In Ashkenaz in the fifteenth century, the number of self-produced paper copyings was twice that of commissioned parchment copyings. In Italy in the fifteenth century, the number of commissioned parchment copyings was three times that of commissioned paper copyings, and the number of self-produced paper copyings (around one third of all manuscripts) is similar to the number of commissioned copyings on parchment.
The earliest surviving Hebrew paper copyings outside the Middle East are from Spain, where improved techniques for the production of Oriental paper began in its Muslim region as early as the eleventh century, as unequivocally proven by two letters in Judaeo-Arabic from the middle of that century that were discovered in the Cairo Geniza. In one letter, Natan ben Nahary of Alexandria informs his cousin Nahary ben Nissim in Fustat, that he was unable to find ‘Andalusian’ paper (paper from Muslim Spain) as requested. Additional proof is contained in another letter in which Daniel ben ‘Azaria Gaon, a merchant from Palestine during the years 1050-1060, asked to have responsa copied for him in Fustat on high quality paper, and he explains: not Egyptian, but Andalusian paper (or paper produced in Tripoli in Lebanon). These letters attest to the fact that in the middle of the eleventh century...

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12 This is the prevailing opinion, based on literary sources, see O. Valls i Subirà, Paper and Watermarks in Catalonia, ed. & transl. J.S.G. Simmons & B.J. van Ginneken (Monumenta Chartae Papyraeae Historiam Illustrantia 12), vol. 1, Amsterdam 1970, p. 6. Later, this same historian of paper predated the initial of paper manufacturing in Spain to the middle of the tenth century, see, Idem, The History of Paper in Spain, transl. S. Nicholson, vol. 1, Madrid 1978, pp. 87 & 98. Cf. E. Lévi-Provençal, Histoire de l’Espagne musulmane, vol. 3, Paris 1950, pp. 33–34. On the other hand, the Dutch Orientalist van Koningsveld sought to disprove the belief in the early dates of paper production in Spain, and argued, based on primary sources, that it began only in the middle of the twelfth century, see P. Sj. van Koningsveld, The Latin-Arabic Glossary of the Leiden University – A Contribution to the Study of Mozarabic Manuscripts and Literature, Leiden 1976, pp. 23, 68 & note 80. Irigoin, an expert on Greek manuscripts and Oriental paper, followed Blum’s lead, and dated the beginnings of paper manufacturing in Spain in the early twelfth century, and Grohmann, a palaeographer and historian of Arabic manuscripts, following Karabacek, the historian of Arabic paper, cites the testimony of Al-Adrissi regarding the high quality of the paper produced in Játiba, see A. Grohmann, Arabische Paläographie, vol. 1, Vienna 1967, p. 101; Irigoin, 'Premiers manuscrits grecs’, p. 200 [=Gréichiske Kodikologie, p. 139]; Karabacek, Arabischer Papier, p. 53 [p. 39 in the English translation]. See however the summary and critical evaluation of these views by Burns, R.I. Burns, Society and Documentation in Crusader Valencia (Diplomatarium regni Valenitiae 1), Princeton 1985, pp. 156–168. In any event, the date of the first known Arabic manuscript written in Spain on paper (presumably not locally produced) is 970, see E. Lévi-Provençal, ‘Un manuscrit de la Bibliothèque du Calife al-Hakam II’, Hespéris, 18 (1934), pp. 198–200 (cited by von Koningsveld, ibid. n. 75). Lévi-Provençal did not mention that indeed the manuscript (kept today in a mosque in Fez) is made of paper, but this is evident from the facsimile on the last page of his article (ibid. p. 129).


various types of paper were already being imported from Muslim Spain to the Middle East. In any case, the earliest surviving dated Hebrew codex from Spain was written on paper in Muslim Valencia in 1119, one hundred and twenty years before the *reconquista*. In the thirteenth century only 16 percent of the manuscripts that have survived from the zones of Sefardic book culture – the Iberian peninsula, North Africa, and Provence – were produced on paper; however, already in the fourteenth century the use of paper increased gradually but quickly – 41 percent in the first half of the century, 68 percent in the second half – and only from the beginning of the fifteenth century did it become the standard writing material, with only a fifth of Sefardic manuscripts then being written on parchment.

In the regions of Christian Europe where Hebrew book craft did not take shape under the impact of Arabic civilisation – in France, Germany, and Italy – the use of paper for the production of Hebrew books did not spread rapidly, as it did with Latin books, and it never replaced parchment as the standard writing material, but at the very most equaled its use in the later medieval period, even though the production of paper in Italy, which was eventually marketed to other countries in Western Europe, began early, in the beginning of the thirteenth century. The earliest paper manuscript surviving from Italy was written in 1276/7-1284, and the earliest paper manuscript from Ashkenaz is from 1343/4. In both zones the use of paper was at first minimal, and it continued to spread gradually. In Italy in the fourteenth century, only 18 percent of the dated manuscripts were written on paper, but in the first half of the fifteenth century, the ratio increased to one third, and only in the second half of that century did their number approximately match that of parchment manuscripts. In France until

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17 This percentage of paper manuscripts and the percentages quoted later in the passage also include manuscripts produced on mixed quires, in which the outer and central bifolia, or only the outer one are made of parchment and the remainder of the inner bifolia are made of paper, (see below in section 3: Combination of paper and parchment). Presumably parchment manuscripts survived to a greater extent than did paper manuscripts, and therefore these percentages may not represent the real relative ratios, but perhaps only a trend.
18 MS St. Petersburg, Oriental Institute B 396.
19 A Kabbalistic manuscript (including the work Sefer hokhmah hanefesh), documented by the Hebrew Palaeography Project (documented there as A119), when it was owned by Rabbi Emmanuel Fisher of Jerusalem (in April 1990 it was offered on auction by Sotheby’s Tel Aviv, and purchased by an Australian collector). The date is confirmed by the watermarks. Only two dated Ashkenazic paper manuscripts have survived, both from the final decade of the same century.
20 According to the statistics presented by Neddermeyer (*Von der Handschrift zum gedruckten Buch*, vol. 1, p. 259) in connection to the Latin (not necessarily dated) manuscripts from Italy, during the first half of the 14th century a quarter of them were written on paper, and during the second half of the century more than half were; during the first half of the 15th century – more than 69 percent were written on paper, and in the second half of that century – more than 71 percent of them were.
the expulsion of the Jews at the end of the fourteenth century no dated paper manuscript has survived, and in the German lands, it was only in the fifteenth century that copyists began to use the new writing materials substantially and even at an accelerated rate. Like in Italy, the meagre utilization of paper in Hebrew manuscripts in Germany is at odds with the rapid diffusion of paper in Latin manuscripts in German lands. During the first half of the fifteenth century, a third of dated Ashkenazic manuscripts were written on paper, while in the second half of that century around half were produced on paper. The Jews’ adherence to producing books on expensive writing material – parchment – in Germany and Italy and their hesitancy to adopt paper, which was bound to reduce the costs of book production, may reflect a conservatism in respect to book production, as is also demonstrated in the ruling techniques used in Italy and the Ashkenazic zones, but may also reflect economic capacity and the requirements of prestigious social status.

The Hebrew Byzantine manuscripts are the only ones that approach the Oriental manuscripts in their rapid adoption of paper as a standard writing material. The earliest surviving Byzantine manuscript written on (Oriental) paper was written in 1207 in Gagra, on the eastern shore of the Black Sea, and it is the earliest surviving dated Byzantine manuscript with an indication of locality. In the fourteenth century only one fifth of Byzantine manuscripts were written on parchment, and in the fifteenth century, only one tenth of them were.

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21 According to the statistics presented by Neddermayer (ibid.) in connection to the Latin (not necessarily dated) manuscripts in the German lands, during the first half of the 14th century more than 17 percent of them were written on paper, and during the second half – more than 76 percent! During the first half of the 15th century – more than 89 percent were written on paper, and during the second half – a similar percentage. Cf. Ornato, Apologia, pp. 20-21. Neddermayer’s data concerning the French manuscripts indicate that when it came to the use of paper, the Latin copyists were more similar to the Hebrew copyists in France than they were to those in Germany. During the first half of the 14th century, only 3 percent of the French manuscripts were written on paper and in the second half of the century – more than 22 percent were.

22 MS St. Petersburg Exp. II C 161. The same copyist copied another manuscript there the following year (MS St. Peters burg Exp. II A 132/2).
1. Parchment

Parchment is the skin of sheep, goats, or calves, both sides of which have been processed to serve as a writing surface suitable for a hand manufactured book in codex form. Initially, the term קְלַף (qelaf) was used in the talmudic literature to describe a skin that was split and processed on one side for the writing of tefillin (prayer phylacteries worn on the arm and forehead), but some of the Rishonim used the term to denote skin processed on both sides for the purpose of writing a codex. Skin of which only one side was processed for writing, suited for the scroll form and


24 According to most of the known vocalisation and pronunciation traditions – Palestinian-Italian, French, Sefardic, and Yemenite – the word should be vocalised as קֶלֶף (=qelef). This is the vocalisation found in the Kaufmann manuscript of the Mishna (M. Shabbat 8:3). Hanoch Yalon vocalised the word as קְלַף in the vocalised edition of the Mishna he prepared (Jerusalem-Tel-Aviv 1952-1959), and in his book Mavo ‘le-niqqud haMishna (Jerusalem 1964, p. 213) (in Hebrew) he noted that the Yemenite reading is קֶלֶף (cf. Y. Shviti’el, ‘Massorot haTeymanim be-diqdqan leshon ַחַקְחַמִים II, Quntresim le-
Inyanei haLashon ha’Ivrit, 2 [1936-1938], p. 63 [=Qovets ma’amaram bi-leshon HaZaL <1>, ed. M. Bar-Asher, Jerusalem, 1972, p. 217] (in Hebrew). The same can be deduced from the rhyme in the resposum of Rabbi Ya’aqov ben Tam to Rabbi Ephraim ben Yitsḥaq almacen קְלֵף (qelaf rhyming with elef) (Sefer hayashar, ed. E.Z. Margaliot and S. Rosenthal, Berlin 1898, section 57, p. 130 (in Hebrew); also cited by A.M. Habermann in connection to a scarcity of books in the Middle Ages in his book Toledot hashefer ha’vri [Jerusalem, 1945, p. 10 (in Hebrew)], where he notes [p. 104] the implications for the pronunciation of the word קֶלֶף; this is the same vocalisation given by Elijah (Baḥur) Leviya in his dictionary Sefer haTishbi (Isny, 1541), [= The book Tishbi: Facsimile of the First Edition, Isny, 1541; ed. M. Krupp, Jerusalem 2001], under the entry קאלף. Ḥelah in his article ‘al masoret leshon ַחַקְחַמִים ba-shira ha’Ivrit bi-yemei habeinayim’ (Leshonenu, 37 [1973], p. 143 [in Hebrew]), Y. Tobi cites this vocalisation from the Taḥkemoni by Yehuda Al-Ḥarizi, according to the Toporovski edition (Tel Aviv 1952), presumably based on the meter, and also from the book Batei hanefesh ve-halehashim by the 13th century Levy ben Avraham ben Hayyim (see citations ibid.). Following Tobi’s article, S. Abramson noted in Leshonenu (ibid., p. 237) that the Ben-Yehuda dictionary (p. 5569, col. 2) cites a rhyming salutation from Buksdorf’s collection of epistles: שמלתמא אלי על מסת החקלף Làm שם את אלי, noting that this salutation appears in the responsa at the end of Sefer Be’er-Sheva’ by Issachar Eylenburg, section 71.

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intended for the writing of a Tora scroll, is called in talmudic literature גויל (gevil), but in the Middle Ages, there were some halakhic (legal) scholars who used קולאף to denote גויל. The talmudic terms for the various types of skins intended for the writing of Tora books, tefillin, and mezuzas (mezuzah = a door-post inscription), and their modes and rules of production were summarized by Maimonides in his Code, *Mishne Tora*, Hilkhot Tefillin, Mezuza and Sefer Torah, 1:6-9:

“6. There are three kinds of leather: גויל, קולאף, and דוקסוסטוס. How are they prepared? The hide of a domesticated or wild animal is taken, and after the hair is removed, it is salted, worked with flour and then with gallnut or other substances which strengthen the leather and cause it to contract. At this stage it is called גויל. 7. If after the hair was removed, the hide was split through its thickness into two, as the leatherworkers know how to do, so that it became two pieces of leather one thin, on the hair side, and a thicker one on the flesh side, and if these were worked first with salt, then with flour and then with gallnut or other similar substances, then the hair side is דוקסוסטוס and the flesh side is called קולאף. 8. It is a law transmitted by Moses from Sinai that a Torah scroll be written on גויל, on the hair side; that tefillin be written on קולאף on the flesh side; and that the mezuzah be written on dukhsustus, on the hair side. Anything written on קולאף on the hair side, or on גויל or dukhsustus on the flesh side, is unfit. 9. Even though this is the law from Sinai, a Torah scroll written on קולאף is fit. Gevil was specified only to exclude dukhsustus, for a Torah scroll written on it is unfit. So also, if one has written a mezuzah on קולאף or on גויל, it is fit; dukhsustus was only specified as being preferred.” (*The Code of Maimonides*, Book Two: The Book of Love, tr. M. Kellner, New Haven-London 2004).

It is interesting that during the long period in which parchment was produced in the zones of codex culture in the Mediterranean basin, the basic production technique did not change: skins were immersed for a lengthy time, in the West in a lime solution,

26 On the precise wording of Maimonides’ text, which was corrupted and altered in print versions, and on the two interpretive traditions regarding the splitting of the hide, see M. Glatzer, ‘The Book of Books: From Scroll to Codex and into Print’, in *Jerusalem Crown, the Bible of the Hebrew University of Jerusalem: companion volume*, ed. M. Glatzer, Jerusalem 2002, pp. 42-45, 57-59 (in Hebrew).
and in the Orient, according to Jewish practice at least, in a saline solution, as evidenced in the ancient talmudic and halakhic literature, and according to chemical tests performed on the Judaean Desert scrolls. Afterwards the hair was removed, the skins were stretched and dried on frames, and their fibres were thus fixed, their sides scraped or rubbed, smoothed, and glossed with an assortment of finishing techniques that ensured that both sides of the parchment would be suitable for writing with ink and for decorating with paints, silver, and gold.\(^{27}\)

Literary halakhic sources and chemical analyses attest to regional differences and variations from one period to another in the materials used for the processing of skins to be made into scrolls, particularly in respect to the utilisation of tannin in the Orient. In the Orient, these differences influenced the uses of parchment produced according to the Arabic custom (مقفول) of writing Tora scrolls, because parchment produced in this way was meant to be written on both sides, while the halachic requirement was that Tora scrolls be written on gevil.\(^{28}\) Differences in production techniques and the

\(^{27}\) In recent generations, the basic process of producing gevil for writing a Tora scroll has not changed. According to the description by Amram Qoraḥ, who was the last rabbi of Yemenite Jewry and a ritual scribe, the final processing of the skins for preparing gevil for a Tora scroll or tefillin was executed by the scribes themselves:

1. The skin is immersed in water up to 10 days.
2. Immersion in slaked lime (calcium hydroxide) up to three weeks.
3. Easy removal of the hair.
4. Repeated stretching of the skins in frames.
5. Scraping with a knife several times (for the writing of Tora scrolls, tefillin, and mezuzas only the flesh side is thoroughly scraped). The skins remain in the frames until they are dry. The entire process lasts around two months. See photo above.

\(^{28}\) See Haran’s articles (n. 23, above). In connection with sources for Rav Hai Gaon’s responsum regarding the types of skin processing (in which the מַכְּפָּרוֹל is mentioned) cited in his article in *Tarbiz*, *ibid.* (p. 369, n. 45), see Ts. Gruner, ‘Teshuvot le-rav Hai Gaon be-‘inyan tefillin’ in *Michtam le-David: Rabbi David Ochs Memorial Volume* (1905-1975), eds. Y. Gilat and E. Stern, Ramat-Gan 1977, pp.
materials used in processing can be discovered only through chemical, microscopic, and to some extent, physical analyses. No doubt, this kind of analysis can be applied to codices in only a very limited way, and even if non-invasive research means could be used extensively, and regional chemical differences were to be found, this would not provide a convenient codicological tool that could be generally applied to parchment manuscripts. Yet it is feasible to grade the kinds of parchment by means of their visual appearance, especially that of the hair sides, which vary from zone to zone (in one specific zone they vary even from period to period). Consequently, these visual differences may serve as a codicological criterion for identifying the provenance of an undated manuscript (while in Ashkenazic manuscripts they serve for indicating the period as well). The typology of parchment types used in Hebrew manuscripts is therefore not based on the methods of processing the skins, but rather on the appearance of the sides of the parchment, particularly the hair side, the variations in which certainly are a product of the difference processing methods. When the hair side was not scraped, the patterns of remaining hair roots and follicles may sometimes indicate what kind of animal served as the source for the processed skins. Sheep, goats, and calves each display unique patterns in which hair residues are distributed or clumped together, as the enlarged photos below show.  

172-181 (in Hebrew), and see ibid. (p. 174) on Maimonides’ responsum to the students of R. Ephraim (Responsa quae extant ab ipso arabice scripta ex schedis cairensibus et libris tam manu scriptis quam impressis R. Moses b. Maimon, ed. J. Blau, vol. 1, Jerusalem 1957, section 139, p. 268), which preceded the composing of Mishne Tora (Maimonides’ Code), and in which Rabbi Hai’s words are cited. See also the following in Maimonides’ response: וספרו (לנו) על ארצות המערב וإلרו’ם能把 ספריהם ר”ק... שרי Exxon פס התרח אולה 향으면 (J. Blau edition, vol. 2, Jerusalem 1961, section 162, pp. 310-311). The many halakhic sources (cf. I.M. Ta-Shma, Ritual, Custom and Reality in Franco-Germany, 1000-1350, Jerusalem 1996, pp. 289-302 [in Hebrew]) do not, so it seems, contribute to our knowledge of the processing of parchment for books, for they pertain to the preparation of gevil for the writing of Tora scrolls based on the talmudic guidelines. According to a few sources, the practice of processing of skins with gallnuts according to the talmudic prescription (mentioned by Maimonides in his above-quote summary) was not preserved anywhere but in Babylonia. See L. Ginzberg, Ginzei Schechter, New York 1938-1939 (Texts and Studies of the Jewish Theological Seminary of America 8), pp. 527-535 (in Hebrew).

29 The photographs have been reproduced from a glossary of Dutch terms for binding: W.K. Gnirrep, J.P. Gumbert & J.A. Szirmai, Kneep en binding: Een terminologie voor de beschrijving van de constructies van oude boekbanden voor het, Den Haag 1992, no. 12.6 (from left to right sheepskin, calf’s skin, goatskin). The hyperlink is accessible via the website of the Dutch Royal Library in the Hague: http://www.kb.nl/cons/kneep/kneep_en_binding_digitaal_20080410.pdf. Examination by electronic microscope may allow more precise identification of the animal from which the skin was sourced. On the scientific methods for identifying animals that provided skin for parchment, along with tables and a bibliography, see: F. Juchauld, Ph. Bonnenberger & A. Komenda, ‘Identification de l’espèce animale des cuirs de reliure et des parchemins’, in Zerdoun Bat-Yehouda & Bourlet (eds.), Matériaux du livre, pp. 13-28. Recently preliminary tests of European medieval parchments have shown traces of nucleic acid (DNA) that can be isolated and analyzed. Genetic analysis of parchments may allow us not only to identify the type of animal from which the skin was taken, but also the biological relationships of different parchments, i.e. the bifolia produced from the same skin source;
Generally speaking, it can be said that marked visual differences can be discerned in the parchment bifolia used in Oriental manuscripts, and likewise in Ashkenazic manuscripts, revealing chronological and regional development and distributions. The parchments of Italian manuscripts and early Ashkenazic manuscripts also have clear visual characteristics. Sefardic parchment is a class unto itself. It is undoubtedly different from other parchment types, but it is less distinctively characterised. It isn’t clear whether the typology proposed here, which is based on the visual appearance of the parchment sides of dated Hebrew manuscripts, is applicable to non-Hebrew manuscripts in the geo-cultural zones of Hebrew book production. It stands to reason that this would be the case, for I am not aware of clear evidence that the Jews were themselves engaged in the production of parchment for making books, whether for self-use or on a large scale, although there is documentary evidence from Spain and Italy that Jews traded in skins and parchment (as well as in paper). And yet, this is

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after the amassment of many data, a DNA test may allow us to identify the geographical provenance of the herd from which the skins were taken: see T. Stinson, ‘Counting Sheep: Potential Applications of DNA Analysis to the Study of Medieval Parchment Production’, in *Kodikologie und Paläographie im Digitalen Zeitalter / Codicology and Palaeography in the Digital Age*, vol. 2, ed. F. Fischer, Ch. Fritz & G. Volger, Norderstedt 2010, pp. 191–207.

30 Latin documents attest that Jews in Frankfurt am Main were required to supply quotas of parchment to the Imperial chancellery in the 14th and 15th centuries. See W. Wattenbach, *Das Schriftwesen im Mittelalter*, Leipzig 1896, p. 131. Wattenbach concluded that the Jews produced the parchment and hypothesized that this may have been the case in other cities, but there is no justification for such a conclusion. In regard to the question of whether Jews in Germany produced parchments, the evidence of *Sefer Hasidim* should again be cited (regarding the rejection of the influence of a zodiac sign on a person’s character), which attests to the fact that the production of parchment was an unfamiliar occupation to Jews in Germany ca. 1200: איך נשתה זה שלוהו אלה היליד ובאול נ/Framework שמטו זה (according to the facsimile edition of MS Parma, passage 989, p. 180.) Nonetheless, it appears that Jews did independently produce gevilm for Tora scrolls, and parchments for tefillin, because of the halakhic requirements, as Maimonides summarized in his Code: <...> Nonetheless, it appears that Jews did independently produce gevilm for Tora scrolls, and parchments for tefillin, because of the halakhic requirements, as Maimonides summarized in his Code: <...> and authorized by his own signature, fol.
hard to determine because of the paucity of comprehensive research on the visual aspects of the parchment sides in Latin manuscripts (apart from the analysis of a few hundred dated Latin manuscripts produced in France and in the German lands and their environs, which we carried out recently for comparative purposes, cf. below in the appendix: Comparison of the parchment in Ashkenazic manuscripts to the parchment in Latin manuscripts produced in the same areas), and the lack of such studies in respect to Greek and Arabic manuscripts. The impression arising from the random examination of the parchments of Arabic manuscripts from the Middle East is that their appearance is identical to that of Oriental Hebrew manuscripts, and this impression corresponds with the evidences from the halakhic sources mentioned above.

**Italian parchment**

The parchment employed in dated Hebrew manuscripts of Italian origin, from the earliest dated manuscript of 1072/1073 until the fifteenth century, typically retains the natural difference between the hair and flesh sides. The disparity is sharp and easily discernible: hair sides are rough and scraped, yet the follicles and residues of hair roots are visible. Flesh sides are smooth and their shade is much lighter than that of the hair sides.

A direct evidence regarding the manufacture of *gevil* by Rabbi Ya'aqov Ben Meir (Rabbenu Tam), for the writing of a scroll of Esther in his own hand appears in a responsum signed with his name and quoted in *Sefer RABIH* at the beginning of Tractate Megilla "עיבוד המגילה, בדידי הוה עובדא שהיתה לי מגילת כתובה בכתב ידי ולא היו הקלפים מעובدين לשמן, וקניתי עורות ונתתים בסיד והוצאתם מן הסיד, וכשנתנו למס על ידי אחד מנערי ונמרטו על ידי הנערים בכל מעשיהם סייעתי, והכתבתי אחריה עדין שתיהם בידי Eliezer ben Joel HaLevi, *Sefer RABIH hu Avi ha'ezri*, ed. D. Dablitzky, Bnei Brak 2005, passage 548, p. 163; I am grateful to Simha Emmanuel who drew my attention to this source). If Jews did produce gevilm for writing Tora scrolls, they may also have produced parchments for writing books. However, I have found no mention of the production of parchment for books in either the halakhic or responsa literature.

31 *Codices hebraicis*, Part II, ms. 38; Part III, ms. 43, 48, Part IV, ms. 71. These are the earliest codices to survive from the European continent.
The quire folios are arranged with matching sides - in each opening the hair side is placed opposite the hair side and alternately the flesh side is placed opposite the flesh side (see below, chapter 4: Quiring) and the difference in the appearance of alternate openings in a codex is very conspicuous. Only high-quality manuscripts which were produced during the fifteenth century, more particularly illuminated ones, were written on refined, thin, very light parchment (known from humanistic copies in Italy), in which hair roots are not seen on the hair side, although one can still easily distinguish between the two sides in this high-quality parchment.

Ashkenazic parchment
The appearance of the parchment employed in the German lands and in a limited way also in France, especially from the last third of the thirteenth century onward, does not resemble parchment types in all other geo-cultural zones; it reflects a shift in the processing technique and in the aesthetic concept of book design. Until this shift, the processing of hides in all areas of Hebrew book production retained substantially or moderately the difference between the flesh sides and hair sides, whether easily discerned as in Italy, or with great effort, as in the Orient. The sides preserved their natural differences to a more or lesser extent, and the quire openings were arranged with matching sides facing each other. Indeed, an appearance like that of the Italian codices, with the stark contrast of the sides is seen in some of the bifolia of the few surviving dated Ashkenazic codices of the last quarter of the twelfth century, and more distinctly in undoubtedly early but undated codices, some earlier than the dated manuscripts. However, it seems that in Germany, northern France and England, a change in the processing of the parchment started to evolve already in the late twelfth century at the latest, at least as attested by the appearance of the parchment in Hebrew manuscripts. The differences between the skin sides was gradually reduced in many of the manuscripts produced there with the intention of equalising the appearance of the hair and flesh sides, until eventually they became entirely alike in the last decades of the thirteenth century, most prominently in Germany, where almost without

32 Codices hebraicis, Part IV, ms. 79 from 1177 (the earliest one), and ms. 84 from 1188/9.
33 E.g. MS Oxford, CCC 133, which undoubtedly was written before the end of the 12th century (see Beit-Arié, Makings, p. 138, and in greater detail in the appendix by Zefira Anton-Rokéah, in Beit-Arié, England, and ibid. in Plate 10, the appearance of the hair side is clear and conspicuous); MS Sassoon 535 (currently in the Avigdor Klagsbad collection) of the French Vitry Mahzor, which according to the calendars it includes, was apparently written between 1123/4 and 1154/5 (see above, chapter 2, n. 95); MS Vienna, ÖNB, Cod. Hebr. 15 (Schwarz Catalogue 4), which was perhaps written even before the 12th century.
exception the parchment sides are identical and indistinguishable. Since most of the surviving Ashkenazic manuscripts are from Germany, also due to the expulsions of the Jews from France in the fourteenth century, we find that most of the extant Ashkenazic manuscripts are written on parchments whose both sides appear equal, and this became the typical distinguishing mark of Ashkenazic manuscripts. Already in the earliest Ashkenazic manuscript from 1177 one can discern that a few of its bifolia are made of parchment whose hair sides were scraped so as to leave no trace of hair roots – in part or in full – and that even the flesh sides were scraped, while on the hair sides of the bifolia of a manuscript from 1189 normally no hair roots at all remained. In a few bifolia one can easily distinguish the sides, and in others this is impossible. In a manuscript from 1193 the parchenting process equalised the sides so much that sometimes they cannot be distinguished and at other times only with great effort, although they can always be distinguished by touch. The date of the writing of the earliest dated Hebrew manuscript written on equalised parchment is 1226/7, and judging from its content it appears to have been produced in Germany.

Due to the scarcity of Ashkenazic manuscripts with indications of place of production, classification by the provenance of these manuscripts (either from the German lands or from France) must be established by their contents, mainly the liturgical rite of prayer books, including the haftarot. The examination of the visual characteristics of the parchment in all the localised and localisable Ashkenazic manuscripts clearly reveals a marked difference between the appearance of the parchent of Hebrew manuscripts produced in the German lands and that of manuscripts produced in northern France. This difference is so consistent and unambiguous that it can serve as a basic codicological criterion for associating manuscripts written from the final third of the thirteenth century to either of the twin regions (Germany and France) of the Ashkenazic geo-cultural zone.

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34 See above, n. 32.
35 See Codices hebraicis, Part IV, ms. 85.
36 Ibid., ms. 91.
37 MS Oxford MS. Loud. Or. 271 (Neubauer Catalogue 1206).
38 The manuscript includes a commentary on the piyyutim and it is clear that the editor and copyist was a French from a family of the French Tosaphists, and he also cites French scholars who were his contemporaries. See A. Grossman, ‘Perush hapiyyutim le-R. Aharon b. R. Haim HaCohen’, in: Aharon Mirsky Jubilee Volume: Essays on Jewish Culture, ed. Z. Malachi, Lod 1986, pp. 451-468 (in Hebrew). However, according to Prof. Yona Frankel, who examined the manuscript at my request, all the piyyutim commented by R. Aharon conform to the Western Ashkenazic rite, and are unrelated to the French rite. Therefore, it would appear that the French editor-copyist lived in Germany.
Examination of the dated manuscripts, either explicitly localised or localised based on content or by the copyist’s identity, shows that in most of the manuscripts produced in France,\(^{39}\) it is possible to clearly distinguish between the parchment sides either easily or with only some small effort. Remains of hair roots are visible in many of them, starting from the earliest localised manuscript, written in France in 1215,\(^{40}\) and until 1395, the year of the final expulsion of its Jews, and also in manuscripts written in the fifteenth century in areas in which Jews were permitted to live or which had not yet become part of the French kingdoms. Moreover, in respect to the parchmenting process, Hebrew manuscripts written in France can generally be characterized negatively: there is not one single French parchment manuscript in Hebrew that is written on entirely equalised, indistinguishable skin sides.\(^{41}\) And yet, it appears that as in the German lands, in northern France also, the differences between the sides were reduced but not to the point of making them entirely equal. Although in a sizeable group of French manuscripts from the third decade and the beginning of the fourth decade of the fourteenth century and around 1300 one can discern an attempt to equalise the parchments’ hair and flesh sides or to reduce their differences by scraping, the sides were nevertheless not fully equalized. In each of these manuscripts the sides are distinguishable, albeit sometimes with difficulty, or it is sometimes possible to discern a mix of quires made of equalised parchment with quires made of differentiated parchment, and it seems that the openings in quires of codices made of differentiated parchment were arranged by matching the sides.

By contrast, as already noted, the earliest dated manuscript made of equalised parchment was produced in 1226/7,\(^{42}\) most likely in Germany, and after 1264 most

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\(^{39}\) Some fifty in number, twenty-four of which were produced before 1300. The French provenance of ten manuscripts has been surmised based on the square script typical of the French style, which has recently been characterized more clearly. See E. Engel, ‘Remarks on the Ashkenazic Script’, in: Specimens of Mediaeval Hebrew Scripts, vol. 3, Jerusalem 2017, pp xvii-xlvi. The identification of the French style based on palaeographical parameters has been validated by the parchment type. We have no information about the quality of the Hebrew manuscripts produced in the Alsace region – whether the standard type used was equalised parchment as in Germany, or parchment in which the difference between the sides was only reduced.

\(^{40}\) MS Vatican Vat. ebr. 468, written in La Rochelle (לרוקילא) in 1215, and perhaps the unlocalised manuscript from 1188/9 (Codices hebraicis, Part IV, ms. 84) can be seen as the earliest dated manuscript based on its script style (Birnbaum, Hebrew Scripts, no. 321, also defined its script as French).

\(^{41}\) With the exception of one manuscript, MS Vatican Vat. ebr. 482, also written in La Rochelle, apparently ca. 1215 (the date did not survive in the colophon, which was inscribed in an intricate micrographic script composed of the letters of the Masora) by a scribe who wrote MS Vatican Vat. ebr. 468, mentioned in the previous note, and also written in La Rochelle in 1215 on a parchment with distinguishable sides.

\(^{42}\) See above, n. 37.
dated manuscripts which were certainly manufactured in German lands according to their explicit localisations, or according to textual evidence such as the liturgical tradition, were inscribed on equalised parchment, that is parchment with equalised sides that present no visible difference. In a small number of manuscripts, mostly from the last third of the thirteenth century we find parchment in which the difference between the sides was reduced, and yet they can still be distinguished either clearly or with some effort. A few Ashkenazic manuscripts from the end of the fourteenth century and the beginning of the fifteenth century (after the expulsion of the Jews from France) written in a square script of the German type, which were presumably manufactured in the German lands, were inscribed on parchment whose sides can only be differentiated with great effort. It can therefore be said that in the German lands after the last third of the thirteenth century there are no parchment in which the differences between the sides were not reduced; generally the sides were entirely equalised, and only in a few manuscripts from the final third of the thirteenth century and from the end of the fourteenth century and onwards can the difference between the sides be discerned either easily or with effort.44

Differentiated parchment had apparently always been used in France, despite the tendency to reduce differences – especially at the turn of thirteenth century and beginning of the fourteenth. The few dated manuscripts produced on differentiated parchment in Germany between 1232/3 and 1257/8 show that the difference between France and Germany emerged, so it would seem, only in the second half of the thirteenth century when Germany adopted equalised parchment, while in France non-equalised parchment or parchment with reduced differences between the sides continued to be used – in the aforementioned group of manuscripts. However, there is no doubt that in France, too, a shift occurred in the mode of processing differentiated parchment. The early parchment in which residues of hair roots were preserved in their entirety and the flesh sides were smooth and glossy was unlike the parchment used there at the end of the thirteenth century and the beginning of the fourteenth,

43 Only the study of the square script has allowed a clear distinction between France and Germany to be discerned, unlike, for the present, with the semi-cursive scripts.
44 Our inability to distinguish between the sides of the German parchment was a predicament shared by the Jewish users of the parchment in Germany, at least during the late Middle Ages, as can be concluded from a gloss from the end of the fifteenth or beginning of the sixteenth century to Seder HuGet by Ya’aqov Margolis: ואם מסופק לך באיזה צד הבשר <שעליו יש לכתוב את הגט> אז קח חתיכה של אותו קלף והלחלח במים או ברוקוREMDEMcrochet_cliff_crochet_repetition_process_legs_biały_biały then the cliff is badly turned (Cited in Glatzer, ‘Aleppo’, p. 90). Cf. Bischoff’s statement (Latin Palaeography, p. 9) that the flesh side is always convex and the hair side concave.

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which, although non-equalised and differentiated, presented differences that were already not so stark.\textsuperscript{45} The codicological criterion provided by the technique of processing Ashkenazic parchment enables us to distinguish between German and French regions, which share the same book craft and script, and it is valid only from the final third of the thirteenth century. Ashkenazic manuscripts produced in France, and especially in Germany, on parchment that fully preserved the differences between the skin sides attest to their own early dates. They were most likely to have been written before the final third of the thirteenth century – in France, but also before the final quarter of the twelfth century – in Germany. Yet, our data does not allow us to know whether in Germany in the early era before the final quarter of the twelfth century Hebrew codices were written on entirely differentiated parchment, or whether, as Latin codicologists contend, equalised parchment had always been in use there.\textsuperscript{46}

Indeed, Latin palaeographers and codicologists have made similar albeit not identical observations, but for the most part these were not the outcome of an examination of comprehensive corpora, and some were the product of impressions that grew out of experience rather than the results of quantitative analysis. The commonly held view is that Latin manuscript and documents present a difference between ‘southern’ parchment (Italy, Spain, Southern France) and ‘northern’ parchment (Germany and Northern France), but all scholars who have paid attention to this issue always described the difference as a geographical distribution between northern and central Europe and southern Europe without associating it with a chronological process.\textsuperscript{47}

\textsuperscript{45} This development still requires further investigation and refinement.

\textsuperscript{46} Peter Gumbert, in a personal communication, told me that his teacher, the famous palaeographer G.I. Lieftinck, had explained to him that from the 9th century German manuscripts used parchment that is usually not differentiated, but that French manuscripts used parchment whose sides could usually be distinguished. Wattenbach (above, n. 30), p. 116-117 had already noted that Italian and Spanish parchment differed from German and French parchment in that its sides were differentiated.

\textsuperscript{47} On the comparison of parchment in Ashkenazic and Latin manuscripts produced in the same regions, see below in the appendix. For a summing up of the material concerning the differentiation between ‘southern’ and ‘northern’ parchment in Latin manuscripts and documents, see L. Santifaller, \textit{Beiträge zur Geschichte der Beschreibstoffe im Mittelalter mit besonderer Berücksichtigung der päpstlichen Kanzlei. I: Untersuchungen} (Mitteilungen des Instituts für Österreichische Geschichtsforschung 16, 1) Graz 1953, pp. 80–82. For the view that the difference between the two parchment types derives from the different source of the skins – in northern Europe parchment was usually made from calf skins that were scraped on both sides producing an equalised appearance, while in the south parchment was made from the skin of sheep and goats, in which the flesh side was processed more thoroughly than the hair side, see G.S. Ivy, ‘The bibliography of the Manuscript Book’, in \textit{The English Library before 1700}, ed. F. Wormald & C.E. Wright, London 1958, pp. 32–65. The view that the equalised parchment was derived from calfskin was popular in England, and such parchment is still commonly called vellum, an etymologically fitting appellation. However, it is highly doubtful whether calf’s skin loses the hair
The shifts in the processing of Ashkenazic parchment – especially German – were accompanied by radical changes in the ruling techniques that swiftly took over bookmaking both in Germany, in which equalised parchment dominated, and in France, where the standard practice was the use of parchment that preserved the natural differences of the skin sides, although more reduced than in the past or than the differences in Italian parchment. The non-equalised parchment was ruled in relief by hard point, folio by folio, unfolded, on the hair side, and the ruling of the horizontal lines was guided by the pricking rows on the outer margins only. And indeed, German manuscripts written on undifferentiated parchment, and also French manuscripts, written on parchment whose side were still either easily distinguishable or with effort, were ruled with coloured ruling, page by page, with a metal plummet guided by pricking rows pricked on the outer and inner margins of the folios. And yet, because the new method of coloured ruling had also been adopted by the French Hebrew copyists, who did not use fully equalised parchment, it is hard to assume that this method spread only because it was suited to equalised parchment. The details of the technical shift in the practice of Ashkenazic ruling will be presented and discussed below, in chapter 6. At any rate, at this point it should be mentioned that the change in the ruling method occurred at the same time as the adoption of equalised parchment (or parchment with a much reduced difference between its sides), and each of the ruling techniques was suited to the type of parchment to which it was applied. This chronological overlap confirms the impression that the characteristics of Ashkenazic roots when processed, as assumed. Parchment producers in Qiryat Moshe in Jerusalem, who process skins for the writing of Tora scrolls, have demonstrated to me how they are able to process calves’ skins in a way that preserves the hair roots. Nevertheless, Ivy (ibid. p. 35) presents an unknown recipe for the preparation of parchment, from a 15th century English manuscript, which falls into two types: the first for preparing parchmyne from a sheepskin which has only been scraped on the hair side, and another for the preparation of velyme from calfskin which must be scraped on both sides to appear equalised. A later systematic but very small-scale study by Palma leads to similar conclusions – the parchment from central-northern Europe, unlike that of Italy and parts of France, was processed so as to equalise the sides, see. M. Palma, ‘Modifiche di alcuni aspetti materiali della produzione libraria latina nei secoli XII e XIII’, Scrittura e Civiltà, 12 (1988), p. 123.

The visual characterisation of equalised parchment in Hebrew manuscripts produced in Germany (and to a limited extent in France) is remarkably similar to the characterisation of the Insular parchment in the earliest Latin manuscripts produced in the British Isles before the end of the 8th century and in manuscripts dating from the same period written in Insular parchment in Continental scriptoria, reflecting an Anglo-Saxon or Irish influence. This parchment too is relatively thick, it is roughly finished, the scraping marks meant to conceal the differences between the sides can be seen on the surfaces of both sides, and indeed the hair and flesh sides are similar in texture and hue. See, J. Brown, ‘The Distribution and Significance of Membrane prepared in the Insular Manner’, in Brown, A Palaeographer’s View, pp. 125-139 and esp. pp. 125-126 (where he also comments on the inappropriate use of the term vellum to denote Insular parchment, which he therefore prefers to term ‘membrane’).
parchment in the various periods developed and changed and had not been fixed and stable from the earliest times, as has been argued in Latin palaeography. The use of differentiated parchment results in the fact that in all zones of production the quires bifolia were arranged with matching sides, ensuring an identical appearance in each of the books openings – hair side facing hair side, and alternately flesh side facing flesh side, and thus a person leafing through the books would see consistent alternations of appearance and colour: the rough look of hair residue on the hair side following by the bright and smooth appearance of the flesh side, and so throughout the book. This issue concerns quiring practices, which will be discussed in the next chapter, in the section on ‘Ordering parchment bifolia’. The use of equalised parchment gave all the book’s openings an identical appearance. The spread of equalised Ashkenazic parchment made its mark, therefore, in the design of the book, and this attests to a new aesthetic approach to its production.

Appendix: Comparison of the parchment in Ashkenazic manuscripts to parchment in Latin manuscripts produced in the same areas

It should be emphasised that the visual characterisation of the parchment in Hebrew manuscripts, as developed at the Hebrew Palaeography Project and collected formulaically in the SfarData database, is based on the documentation of the vast majority of the dated Hebrew manuscripts by many documenters over the course of forty years, and as can be expected of a formulaic, impressionistic documentation of a visual phenomenon, it is liable over time to become inconsistent and non-uniform. Indeed, re-examination of the appearance of the parchment in early German and French Hebrew manuscripts confirms this possibility. In order to comprehend the phenomenon revealed by the Hebrew manuscripts, and its connection to book craft generally, and to confirm, refute, or correct the impressionistic observations and reaffirm or refine their impact on the typologies and chronologies, it is advisable to compare the conclusions drawn from examination of the parchment in Hebrew manuscripts with conclusions drawn from examining Latin manuscripts from the same regions and same time periods. For the purpose of comparison, during 2008-2012 I conducted examinations, together with Nurit Pasternak, of some three hundred Latin manuscripts produced in northern
France in the German lands and its environs (such as Bohemia, Moravia, and the Netherlands), most of which were explicitly localised, or whose locality was firmly established. The examined manuscripts were from the twelfth through the fourteenth century, and some were from the ninth through the eleventh century, and from the fifteenth century. Some were explicitly dated, but because of the scarcity of explicitly dated manuscripts in the Latin script, some of them, usually monastic manuscripts, were dated based on indirect but reliable evidence.48

The manuscripts were located and identified according to the descriptions in catalogues of dated Latin manuscripts, foremost at libraries in Paris, especially in the Bibliothèque National de France collection, at the British Library in London, and at the Austrian National Library in Vienna, as well as at the Bodleian Library in Oxford, and at the libraries of Cambridge University (The University Library, Trinity College, Fitzwilliam Museum and at Corpus Christi College).49 As part of this survey, the same examiners viewed the parchment in all the selected Latin manuscripts, and at each collection that held a large number of manuscripts that matched the required manuscript profile, the examination was carried out continuously and within a relatively brief time period. Due to these advantages the limitations of un-measurable, impressionistic viewing was reduced.

The comparative study that we conducted revealed that Latin manuscripts both in France and in the German lands present a reduction of differences of the parchment’s sides, although the duration and scope of the phenomena do not overlap with those documented for the Hebrew manuscripts from the same regions. According to the

48 The research was supported by the Israel National Science Foundation (Grant no. 650/08).
evidence of the Latin manuscripts, the beginnings of the new method of processing skins and the production of parchment with reduced differences – almost to the point of equalisation – of the skin sides occurred prior to the time in which these methods can be discerned in the dated Ashkenazic manuscripts. Until the eleventh century in the regions of northern France and Germany, the parchment produced preserved the natural differences between the sides, but already close the middle of the eleventh century in France and in Belgium, and at least from the second third of the twelfth century in the German lands, a gradual shift began to writing on parchment processed to render a similar and almost equal appearance to both skin sides.

In a sample of dated manuscripts from northern France, and especially from Flanders, the earliest manuscripts written on parchments whose side had been reduced, generally without leaving residues of hair follicles, but still allowing the sides to be distinguished, mostly because of the difference in the colour and roughness of the hair sides, derive from the second decade of the eleventh century until the beginning of the twelfth century. It would seem that the parchment from these and other manuscripts from Flanders possesses unique visual traits.

Apart from two manuscripts – a manuscript written on the border of Flanders between 1022 and 1041 and the Norman manuscript written at the Celtic Landévennec Abbey in Bretagne in 952 (mentioned above in n. 50) – before 1142, the years in which MS London, BL Add. 15722 was produced, apparently in the Citeaux Abbey in Eastern France, no manuscripts written on parchment with reduced sides have been found in the sample from France proper. Indeed, in many of the French manuscripts it is possible to differentiate the sides either easily or with effort, and at the end of the fourteenth century, the tendency to equalise the skin sides increased.

The manuscripts are MS London Royal 5 A.XI, written between 1022 and 1041, probably at the Abbey of St. Bertin (in Saint Omer in northern France at the border of Flanders); MS London Royal 6 A. V., written in Belgium before 1049; MS London Add. 16974 (fols. 114-129), written in <St. Trand> (Flanders) during 1092-1097; and MS Paris Lat. 2195, written in Tournai (Flanders) in 1105.

Two manuscripts were written earlier. In MS Cambridge, Corpus Christi College 272, written in 883-4, apparently in Reims at the Abbey of Saint Remi, both parchment sides were scraped. The sides can be differentiated by hue, and under a magnifying glass it is possible sometimes to discern remnants of hair follicles. MS Cambridge, Corpus Christi College 192, written in 952 at the Celtic Landévennec monastery in Bretagne; here the parchment is entirely equalised, but this presumably reflects an Insular tradition that continued there even after the end of the 8th century (above, n. 47), as also probably evidenced by the quiring in quinions (see the next chapter), the pricking in both inner and outer margins (below, chapter 5, n. 47), and perhaps also the use of hard point (?) for ruling (ibid. n. 120).

MS Cambridge, Trinity College, B. 16.44, which according to the evidence of historical circumstances, was written at the Norman Bec Abbey between 1059 and 1070, is written on parchment with greatly reduced sides, but remnants of hair follicles allow them to be differentiated.
development and characterisation are similar to the findings from the Hebrew manuscripts produced in northern France: until the beginning of the fourteenth century a significant number of manuscripts were written on non-equalised parchment; manuscripts with fully equalised parchment are rare, and in some of them bifolia of non-equalised parchment appear, while in others the sides can only be distinguished with effort or only by touch.

In the regions of the German lands, the earliest manuscript among the dated manuscripts in the sample which is written on equalized parchment, but whose skin sides can be differentiated with effort is MS Vienna, ÖNB Cod. 1063, manufactured in St. Florian, Austria, in 1134. Among the dated manuscripts in the sample deriving from German regions, one can discern manuscripts written on entirely equalised parchment as early as the middle of the twelfth century. From the late thirteenth century and onward, most of the manuscripts produced in German lands and their environs were written on fully equalised parchment, like the Hebrew manuscripts produced there. Yet, it must be emphasized that judging from the residue of hair follicles at the margins of these manuscripts (especially the lower margins), and from the tangible feel of the parchment, it is clear that the copyists distinguished the sides and arranged the quire bifolia with matching sides (with each opening presenting either the hairs sides or flesh sides facing each other).

Naturally, many of the Latin manuscripts examined were produced in abbeys, and many of them are splendidly illustrated and decorated. It seems that in France, equalised parchment with side distinguishable only by touch was also used already in the sixth decade of the twelfth century to produce Latin manuscripts, mostly the exceptionally lavish, sometimes royal ones, and especially those produced in Paris on superior parchment. These aspects of the production of Latin manuscripts illustrate the need to classify their parchments not only based on the differences between the skins side, but also according to the width of the parchment, the book genres, and their general quality, and it is likely that these aspects may undermine the comparison with Hebrew manuscripts. Nevertheless, this sample confirms most of the findings collected and classified in the formulaic documentation of Ashkenazic parchment in dated Hebrew manuscripts. The examination of the Latin manuscripts has contributed to our understanding and awareness that the Hebrew copyists in both Germany and France, who used equalised parchment, knew how to distinguish between the equalised sides and consistently arranged the quire bifolia with matching sides facing
each other in the openings, as demonstrated by the follicle hairs in the margins and the felt texture of the parchment.

This survey demonstrates that the scraping and removal of hair follicles in the written area only, while leaving them in the margins, is a common phenomenon. Its occurrence in folio manuscripts (in which the bifolia of all the quires were produced from a single processed sheet of leather) may, of course, attest to the fact that the processors themselves thoroughly scraped the hair follicles, but left them at the margins of the leather sheets destined for copying in the folio format, but its prevalence also in books with smaller formats, especially octavo, indicates that the scraping was done after the bifolia were cut by the copyists according to the planned layout of the writing surface.

**Oriental and Yemenite parchment**

Oriental parchment is known from biblical codices from the Middle East, which have survived especially from the tenth and eleventh century, of which dated exemplars are very few. As mentioned, the use of parchment in the Orient has survived only in manuscripts before 1327, and in Yemen alone a number of parchment manuscripts have survived from the 1470s and 1480s and the early sixteenth century. The method of preparing the parchment in the Orient and in Yemen makes it difficult to distinguish between the hair and flesh sides, since both sides are glossy and smooth. No signs of scraping can be discerned on the hair sides, and only rarely do they contain hair residue or follicles. Nevertheless, it is always possible to identify the sides by their hues – the flesh sides being slightly lighter and brighter than the hair sides.52 It is obvious that despite the similarity of the two sides, the manuscripts’ producers easily distinguished between them, as the arrangement of the bifolia in a quire and the method of ruling them demonstrate. Yet, it seems likely that the aesthetic principle that parchment intended for books should present skins sides that are as similar as possible dictated this manner of preparing the parchment, which no doubt is an Arabic method. As in Germany, so in the Middle East, it appears that book producers or parchment manufacturers sought to give the two sides of the writing

52 According to Déroche, *Islamic Codicology*, p. 47, the hair and flesh sides can be distinguished in early Qur’ans (the use of parchment in the Eastern Islamic world ceased already in the tenth century) according to the differences of hue and texture – the flesh side is paler than the hair side, which possesses a velvety texture. In Abbasid Qur’ans, signs of the hair side are discernible in the margins, especially around the prickling and near the edges. The Jews probably used the Arabic parchment (رقّ), which is mentioned in the Geonic halakhic literature.
material a similar appearance, but that in Germany (and to a certain extent in France),
the similarity was achieved by scraping the two sides, whereas in the Orient it was
achieved by polishing them.

Sefardic parchment
The visual features of the parchment surviving from Christian Spain in the last two
decades of the twelfth century are basically similar to those of Italian parchment. However, we ought to consider the parchment from the earliest extant manuscript
from the Sefardic zones which was written in the second half of the tenth century or in
the first half of the eleventh century (the date in the colophon is damaged) in
Kairouan (Tunisia). The parchment used in this biblical codex is of the Oriental type
presenting two skin types that are very similar in appearance: the difference can be
discerned mainly by their hues, but no residue of hairs roots are visible except
sometimes in the margins, and both sides are smooth and glossy. The paucity of
evidences from North Africa, and the absence of early evidences from Spain prevent
us from establishing whether the oriental-Arabic type had indeed been used in these
zones (or in North Africa alone) in early times.

Lacking exact quantititative documentation about the appearance of the parchment used
in the later periods (from the thirteenth century onward) in Iberia and Provence (the
dated parchments from North Africa are too few to be characterised), only a rough
characterisation will be offered here. Over time, the appearance of Sefardic parchment
changed, in comparison to its appearance in early manuscripts, but it is always
possible to distinguish between the two sides without special effort. In most, the hair
side is not scraped and hair follicles and roots are visible in the entire manuscript or in
some of its bifolia. The flesh side is very bright and glossy.

Byzantine parchment
It appears that the parchment used in the few parchment manuscripts surviving from
the Byzantine zones bears a similarity to the Italian type, in that its processing

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53 Babylonian Talmud, the three ‘Bava’s, written in Gerona in 1184; it is the earliest dated manuscript
from Christian Spain (See Codices hebraicis, Part IV, ms. 81); A ḫumash written in Gerona in 1188
(see ibid. in the Hebrew introduction, p. 11, ms. E); A book of the Prophets and Hagiographa, written
in Toledo in 1197/8 (see ibid. ms. 95)
54 For a description of the manuscript found in Kairouan, see Codices hebraicis, Part II, ms. 29. In any
case, the parchment in the talmudic manuscript, which was written apparently in North Africa in 1123
(ibid. Part III, ms. 63) is similar in appearance to the three mentioned manuscripts surviving from late
12th century Spain, in presenting a conspicuous difference between the hair and flesh sides, which
preserved the hair follicles.

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retained the natural differences between the two sides, and thus it allows clear differentiation between them. The hairs sides usually present hair residues with no scratch marks.

Parchment from a Hebrew manuscript photographed with an electronic microscope

2. Paper

At the outset of this chapter, I mentioned that the word נייר in talmudic Hebrew designated the writing material made of papyrus, and that over time this meaning evolved to signify the new writing material that had spread from China and which is known by this name today. When the use of paper for Hebrew texts first began to diffuse throughout Italy, the term נייר was not yet used to describe this new writing material. In a sales deed of two manuscripts from 1284 and in later book lists the term used is מוך, which in the Hebrew of the Tosefta and the Talmud means rags, worn out clothes, or textile chaff (today’s ‘cotton wool’), and in truth, the latter term is eminently suited to paper made of pounded rags. Indeed, until the second half of the fifteenth century the Hebrew term נייר is undocumented. At the end of the fifth- and the beginning of the sixth decade of that century the term نيיר is documented (plural of נייר = paper), denoting leaves of paper, appears for the first time in three Byzantine colophons, however other than these instances the term נייר is not mentioned in colophons before 1540. In Judaeo-Arabic book lists from the Middle East found in the

Cairo Geniza, the Arabic terms *warq* (ורק) or *qagd* (קאגד) appear, yet these terms are not used in the numerous colophons written in Judaeo-Arabic, although by the eleventh century paper had already become the standard writing material for Hebrew manuscripts in the Eastern Islamic zone.

Paper for use as writing material was invented in China; the first findings come from central China during the Western Han dynasty (206 BCE until 8 CE.) – some nine hundred years before knowledge of its production methods reached the Arabs. The raw materials that compose these findings and other paper findings from the years 73-49, 52, 49, and 6 B.C.E have been identified as fibres produced from a variety of plants, rags, used fishing nets, and worn out ropes, which mostly contained fibres derived from cannabis. It is commonly recounted that the Arabs learned how to produce paper from Chinese papermakers in Samarkand who were taken prisoner during the Battle of Talas in central Asia (southern Kazakhstan) in 751, and it seems that this account, despite its fabulous character, is not far from the historical truth.

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56 For these terms and others in Arabic, and on the history of Arabic papermaking, see A. Grohmann, *From the World of Arabic Papyri*, Cairo 1952, pp. 49–57. The term *ורק* (pl. *אוראק*) appears in Geniza booklists. See, Allony, *Jewish Library*, as referenced by the index entries. The spelling *קאגד* (rather than *קאגד*) appears there a few times.


58 Muhammad Jamil refuted the validity of the various sources regarding the use of paper before the capture of Samarkand, see, M.F. Jamil, ‘*Islamic Wirāqah “Stationery” During the Early Middle Ages*’, Ph.D Dissertation, University of Michigan, 1985, pp. 99–105. According to him, the traditional accounts are validated by a Chinese source (*ibid.*, p. 108). There is little information about the
From Samarkand the production of paper processed out of worn linen textiles spread to other centres in the Middle East and to other Muslim countries in the Maghreb and in Spain. In Christian Europe, paper manufacturing began only in the thirteenth century in Italy.

Oriental (Arabic) and Occidental paper

Medieval paper is divided, based on its visual characteristics which reflect distinct technologies, into two main types: Oriental paper, which was produced in the Eastern Islamic countries throughout the Middle East and in Eastern Central Asia, and which the research literature used to designate ‘Arabic paper’ although of late it is also called ‘Islamic paper’, and Occidental paper, which was eventually produced in Christian lands, and is also called ‘European paper’. The Oriental (or Islamic) type had an offshoot in the Maghreb and Andalusia from the eleventh through the thirteenth century, but the data about this subtype are not plentiful. The paper used in Hebrew manuscripts belongs, perforce, to either one of these two types, because of the distribution of Hebrew book production in the zones of the two civilisations. The knowledge of these two types and the ability to distinguish between them and characterise them historically are of fundamental importance for Hebrew codicology, for the type of paper (similar to parchment) attests more than any other codicological characteristic to the manuscript’s provenance. This information is vital given the unique historical circumstances of the Jewish people and its many peregrinations, in a reality in which manuscripts were written by immigrants who continued to use the script of their native country. The paper of which Hebrew manuscripts were made is not of course unique to these books. It is no different from the paper used for the variety of manuscripts in Arabic, Persian, Greek, Latin, etc., which were produced in the host societies where Jews lived and where paper was manufactured. The documentation of the paper used in Hebrew manuscripts and the processing and analysis of the collected data would seem to add little to the study and growing knowledge of paper and of its development and visual characteristics, amassed since the end of the nineteenth century from manuscripts and documents in Latin, Greek, and Arabic scripts. This is true of Occidental, European paper, and particularly of the

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technology of paper production in the early Abbasid period (which began in 749), and, furthermore, this meagre material is presented in later sources. Jamil points out that the most interesting information, from the writings of Ibn Badis (see below), relates to a later technique. On Arabic sources for the beginning of paper production and its diffusion, cf. Amar, ‘Paper Industry’, pp. 74-75.
paper manufactured in Europe from the end of the thirteenth century onwards, to the
description, analysis, and classification of which so many studies have been devoted.
The contribution of Hebrew manuscripts to the study of European paper is indeed
negligible; however, the value of these manuscripts for the study of paper produced
in the Middle East and in Western Central Asia and for its visual typology is great,
because until recently no systematic documentation of paper in Oriental Arabic
manuscripts has been carried out. The documentation of the dated Hebrew
manuscripts from every collection in the world has enabled the construction of a
tentative typology of the visual morphology of Oriental paper, which was published
already in 1975, and since then has been updated twice. In the meantime, additional
characterisations of Oriental paper have been published, based on the Arabic
manuscripts in the collections kept in France’s Bibliothèque National.

59 At the same time, the important methodological contribution of Monique Zerdoun Bat-Yehouda
(who for many years was a member of the French team of the Hebrew palaeography project) to the
study of watermarked Occidental paper is based also on the data from dated Hebrew manuscripts, see.
Zerdoun Bat-Yehouda, Papiers filigranés. Because of the paucity of early dated European Hebrew
paper manuscripts, the use of early Occidental paper morphology for the dating of Hebrew manuscripts
(and to a certain extent, identify their provenance), based primarily on the spacing of the chain lines
and the width of the laid lines, and on zigzag markings (see below in the text referenced by notes 69-
72, 75), relies on the study of Latin and Greek manuscripts. One such example is MS Jerusalem Heb.
8° 3941, which contains a corpus of unknown translations to medical treatises by Maimonides (See M.
567-574 (in Hebrew), which were written in a Byzantine script on non-watermarked Occidental paper,
with external and internal parchment bifolia (on mixed quiring, see below, section 3). The dating of the
manuscript is based on the width of the laid lines – 43-45 millimetres (using the standard measure in
the research of Latin and Greek manuscripts – the width of twenty lines), and on the spacing of the
chain lines – 50.59 millimetres, which are visible in its bifolia see. M. Beit-Arié, ‘A Palaeographical
Description of the Jerusalem Hebrew Manuscript’, in Moses Maimonides on the Causes of Symptoms,

60 Beit-Arié, Hebrew Codicology, pp. 26-37.
‘Oriental Paper Patterns’ (1999). The latest update is based on 450 dated Hebrew manuscripts written
in the Orient (including the region of Yemen, which according to the classification used in this book
was marked as a codicological sub-type of the Orient) on Oriental paper, and on another 140 dated non-
Hebrew manuscripts written in the Orient also on Oriental paper, mostly in Arabic, and a few in
Persian and Syriac, which I examined in the collections of Oxford’s Bodleian Library. The typology
presented here is also based on this corpus.

62 Chiefly the study by Genevieve Humbert, ‘Papiers non filigranés’, which thoroughly examined the
Arabic manuscripts in the Bibliothèque national de France (208 different papers). Another article
penned by her is based on this work: G. Humbert, ‘Un papier fabriqué ver 1350 en Egypte’, in Zerdoun
Bat-Yehouda (ed.), Papier au Moyen Âge, pp. 61-73, and another more general paper by her: ‘Le
manuscrit arabe et ses papiers’, in La tradition manuscrite en écriture arabe, ed. G. Humbert (Revue
des Mondes Musulmans et de la Méditerranée, 99–100 [2002]), pp. 56–77. See The studies by Marie-
Therese Le Léannec-Bavavéas, based on Greek manuscripts: M.-T. Le Léannec-Bavavéas, ‘Zigzag et
filigrane sont-ils incompatibles? Enquête dans les manuscrits de la Bibliothèque nationale de France’,
in: Zerdoun Bat-Yehouda (ed.), Papier au Moyen Âge, pp. 119-134; idem, ‘Les papiers non filigranés
médiévaux dans les manuscrits grecs de la Bibliothèque nationale de France’, Scriptorium, 53 (1999),
pp. 275–324., and cf. the comprehensive bibliography she compiled: Papiers non filigranés. A richly
illustrated decorative book intended for the lay public, but which includes an extensive bibliography on
Although the documentation of Hebrew manuscripts produced in the Orient was pioneering by virtue of the very undertaking which comprehended all of the dated Oriental paper manuscripts, it did not include all of the visual elements of paper that are studied today. This documentation comprises only a small part of the comprehensive documentation of all the codicological characteristics of Hebrew manuscripts, and it was initiated many years before the meticulous research into the characterisation of paper in general and of Oriental paper in particular had developed. It therefore was not undertaken with the same measure of detail expert researchers of paper have of late dedicated to such documentation, nor was it possible to anticipate all of the detailed visual aspects of which researchers later became aware. And yet, the documents in Hebrew script that were preserved in the Cairo Geniza – especially the book lists, but also a few letters – provide information about the types of paper manufactured in the Middle East and in Muslim countries outside it. Judaeo-Arabic terms for paper such as אַלְלוֹרְק (or קָאֵגַד/קָאָגַד, usually), דָּמְשָׁקִי, and עָרֵקי (Baghdadi, Damascene, or Iraqi) are mentioned in the book lists collected by Nehemiah Allony.

The raw material for the manufacture of paper in the Middle East, Europe, Muslim Spain, and in the Maghreb, notwithstanding the visual differences between the types, was the same: fibres of beaten rags from clothing, cloths, and woven textiles, usually made of linen, but in the Orient also eventually from cotton and to a small degree

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63 The scope and level of detail of the documentation of the paper can be seen in the questionnaire for documenting non-watermarked (a.k.a ‘Oriental’) paper formulated by a group of researchers from the Institut de recherche et d’histoire des textes (IRHIT) of the Centre national de la recherche scientifique (CNRS) in Paris; see: M.-T. Le Léannec-Bavavéas & G. Humbert, ‘Une méthode de description du papier non filigrané (dit “oriental”), Gazette du livre médiéval, 17 (1990), pp. 24–30. This questionnaire includes a number of measurable traits that were absent from the abbreviated documentation of the Oriental paper in Hebrew manuscripts, such as the width of the laid lines and their orientations (examined in most of the Hebrew manuscripts only before 1280 – see below), measurement of the paper’s whiteness, characterisation of the pulp, its transparency, as well as the spaces between the light and dark regions. The chief weakness in the documentation of Hebrew manuscripts is the lack of measurements of the spaces between the chain lines or their groupings, as well as of the width of the laid lines (see below). A valuable example of a meticulous study comprising multiple parameters is a single survey of ‘Arabic-Occidental’ (i.e. Spanish) paper, based on 72 Greek manuscripts: P. Canart et al., ‘Une enquête sur le papier de type “arabe occidental” ou espagnol non filigrané’ in Maniaci & Munafò (eds.), Book Materials and Techniques, vol. 2, pp. 313-393 (reprinted in: P. Canart, Études de paléographie et de codicologie, ed. M.L. Agati & M. D’Agostino [Studi e testi 451], Vatican City 2008, vol. 2, pp. 1001–1081). This study too proposes the formalisation of the description of paper.

64 See Allony, Jewish Library, by index entry.
from worn out ropes made of cannabis.\textsuperscript{65} In all of the paper manufacturing technologies, whether in the Orient or Europe, frames fitted with wire-mesh or sieve-like screen or straining cloth were submerged in paper pulp. After the pulp dried, the wire patterns were visible in the paper sheets, because the fibre covering the wires is thinner and more dense than the fibre that accumulated in the spaces between the lines, and therefore they appear as more transparent when held up to a light source. The sizing agent used for Oriental paper was starch, which in Europe was soon replaced by glue from an animal source (gelatin).\textsuperscript{66} Although the raw material for the preparation of paper was identical, from the start of paper production in Europe the manufacturing technologies were utterly different from those used in the Middle East by the Arabs. This difference is manifest in the morphology of the paper sheets. The morphology of the wire frames (or straining cloth) onto which the raw material in the papermaking vats was spread and the shapes imprinted on the paper sheets and visible when viewed against a light source are completely different in the two types of paper.\textsuperscript{67} ‘Arabic’ (i.e. Oriental) paper was first studied by Karabacek, chiefly on the basis of Arabic literary sources.\textsuperscript{68} It was Irigoin who in a series of short groundbreaking articles pointed out the differences between Oriental and Occidental paper and revealed the morphology of most aspects of Oriental paper, based

\textsuperscript{65} For the transition to using cotton cloths and textiles instead of linen, seemingly in the course of the tenth century, see the studies cited in Zohar Amar’s article, ‘Paper Industry’, pp. 81-83. The transition occurred in paper manufacturing, in the regions of al-Sham (Syria and Palestine) at least, in the wake of the spread of cotton cultivation in this area. Indeed, microscopic examination of the raw material in 21 documents from 11\textsuperscript{th} century Palestine and from the early 12\textsuperscript{th} century found in the Fustat Geniza has shown that the material composition of most of them includes cotton fibres in secondary use, see Z. Amar, A. Gorski & I. Neuman, ‘Raw Materials in the Paper and Textile Industry in al-Sham during the Middle Ages in Light of an Analysis of Documents from the Cairo Genizah’, in Papers of the 27\textsuperscript{th} Congress of Paper Historians, Dzień Zdjęć – Kraków, Poland 3–10 September 2004 (IPH Congressbook / IPH-Kongressbuch, 15).

\textsuperscript{66} See, J. Wiesner, Die mikroskopische Untersuchung des Papiers mit besonderer Berücksichtigung der ältesten orientalischen und europäischen Papiere (Mitteilung aus der Sammlung der Papyrus Erzherzog Rainer 3), Vienna 1887. Wiesner’s microscopic analysis is presented in brief in Briquet, Opuscula, pp. 165-166. An early European Hebrew source about the preparation of paper from rags can be found in the commentary by Menahem ben Shelomo Meiri (Provenance 1249-1315), Beit habešira on B. Sota 17a: בנהיוה<style type="text/css"> "הנייר נעשה מבלאות של בגדים הנקרא קאגד; See, S. Abramson, ‘Mi-derekh hametargemim min ha’aravit le-‘ivrit’, Leshonenu, 58 (1995), p. 236 (in Hebrew).\textsuperscript{67} See Hunter, Papermaking.

\textsuperscript{67} ‘Arabic’ (i.e. Oriental) paper was first studied by Karabacek, chiefly on the basis of Arabic literary sources.\textsuperscript{68} It was Irigoin who in a series of short groundbreaking articles pointed out the differences between Oriental and Occidental paper and revealed the morphology of most aspects of Oriental paper, based

\textsuperscript{68} Karabacek, Arabischer Papier (and the English translation, which was published more than a century later); Karabacek, Neue Quellen. Many bibliographic references to papermaking and its decline in the Arabic world can be found in the work by Ashtor: E. Ashtor, A Social and Economic History of the Near East in the Middle Ages, London 1976, pp. 99–100 (no. 342, n. 34), 200, 262 (no. 354, n. 81), 153 (no. 348, n. 55), 307 (no. 368, n. 44). Cf. Idem, ‘Levantine Sugar Industry in the Later Middle Ages – An Example of Technical Decline’, Israel Oriental Studies, 7 (1977), pp. 266–277. Here Ashtor describes the flourishing of the paper industry in the Near East up until the end of the 14\textsuperscript{th} century, when cheaper Italian paper flooded the Middle East.
especially on Greek manuscripts. Paper producers in the Orient, and seemingly also in the Maghreb continued to use the basic Chinese technique: the strainers in the papermaking moulds were fitted with flexible materials – at first probably cloths and later wire mesh sieves composed from plants (bamboo or reeds) and stitched with horse hairs or silk threads – and then were submerged in vats that contained the pulp. At the beginning of papermaking in the Orient, the moulds were apparently made of bamboo, and later of wood, and the sieves that were laid in them unattached floated when suspended in the pulp. Later on, the wire sieves were attached to the moulds. European papermakers replaced the plant-based meshes with hard and dense metal wires that were stitched with heavier metal wires, attaching these to the wooden frames. Naturally, the traces of the mesh in the sheets of Oriental paper were not straight but crooked, only faintly visible and irregular, while the traces of the wire mesh in Occidental paper were straight, clear, and regular. In addition, the Occidental paper’s appearance was affected by the changes to the pulp used in manufacturing, due to the use of hydraulic mills for processing the raw material instead of pounding it manually according to the Oriental practice. This shift began in Spain already during the Muslim kingdom of Valencia and continued there after the Christian re-conquest of the kingdom of Valencia and of Catalonia.

The narrowly-spaced lines visible in the paper are called ‘laid lines’ (‘vergeurs’ in French, ‘vergella’ in Italian), and the wide-spaced stitching lines that were perpendicular to them are called ‘chain lines’ (‘chainette’ in French, ‘filone’ in Italian). The differences between the two types of paper resulting from the moulds’ sieve patterns are even more conspicuous in the disposition of the components of the paper’s visible structure: in Occidental paper single, regular, uniformly-spaced laid and chain lines are always visible, whereas the visible structure of the paper produced

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70 See Burns, Society and Documentation (above, n. 12), pp. 168-169 and the literature survey of prior research cited there.

71 Until recent years, the French term was pontiseaux (little bridges), which is now used to denote the wooden supports underneath the mesh. As for the other terms used in papermaking, see: E.J. Labarre, Dictionary and Encyclopaedia of Paper and Paper Making with Equivalents in French, German, Dutch, Italian, Spanish and Swedish, Amsterdam 1969.
in the Middle East and apparently also in the Maghreb is highly variable and attests to the use of different types of sieves that varied from place to place and from one time period to the next. There are a number of types of Oriental paper which can be distinguished by the structure of the mesh: (a) paper in which no mesh structure is visible, a phenomenon that should be attributed to the use of a cloth or silk for straining the water; (b) paper in which only laid lines are visible; (c) a large group of paper types in which both chain and laid lines are visible as later could be observed in Occidental paper, but unlike the latter, in all the types belonging to this group (apart from one type which was seldom used) the chain lines are not uniform and regularly spaced but clustered in different but not necessarily evenly-spaced groups, and sometimes they are clustered in two alternating clustering patterns.72 The following presents a typology of Oriental paper based on the documentation of 450 Hebrew dated manuscripts written on Oriental paper in the Middle East (including Yemenite manuscripts), and another 140 dated manuscripts written there, mostly Arabic and a few in Persian and Syriac, from the Bodleian Library collection.

Paper produced between the eleventh and thirteenth century in the Western Muslim countries (in Spain and the Maghreb) and in thirteenth century Christian Spain

As noted earlier, the production of paper in the Muslim West began in Muslim Spain already in the eleventh century at the latest, and at any rate in the middle of that century Andalusian paper’s reputation for quality had already spread to the Middle East as evidenced by the Geniza letters. According to Arab sources, paper mills were established in the tenth century in Tlemçen (Algeria) and Fez (Morocco). We possess no data derived from dated Hebrew manuscripts regarding the morphology of the mesh sieve that was used in Muslim Spain, apart from one manuscript written on paper in Muslim Spain before the thirteenth century – a fragment of a book produced on paper in Muslim Valencia in 1119.73 This is also the earliest dated Hebrew manuscript surviving from the Iberian Peninsula. The fragment’s leaves allow us to

72 The ‘pontiseau’ – the wooden supports beneath the wire sieve – imprinted shadings on the paper sheets. In the Occidental frames, they were underneath the chain lines and therefore their shadings overlap with the chain line. According to Baker, beginning in the 12th century one can discern in Oriental paper shadings spaced 55-85 millimetres apart (and especially 75 millimetres), but they do not overlap with the chain lines because of the different technology (the wire sieve was removed after the production of each sheet). See, D. Baker, ‘Arab Paper Making’, The Paper Conservator, 15 (1991), p. 31.
73 See above, n. 16.
distinguish irregularly spaced single laid and chain lines (with chain lines 35, 38-40, 45 millimetres apart). Similarly, only one dated Hebrew manuscript written on paper in the Maghreb before the end of the thirteenth century has survived, and studies of paper in Arabic manuscripts also do not furnish characteristics of the paper form this region. The said manuscript was written, ostensibly, in 1125/6 in Zawila al-Mahdiya (Tunisia). Its colophons are suspected not to have been inscribed by the copyist but rather by the owner, and it may be therefore that the manuscript is earlier. In any event, it is written in an Oriental script (by two hands) on paper imprinted with an Oriental type mould pattern.

In the thirteenth century, after the re-conquest of most of the Iberian Peninsula by the Christians, paper production technology appears to be already quite similar to the Occidental technology which had developed over the course of that century in Italy and had also infiltrated Christian Spain. We possess ten dated Hebrew Sefardic manuscripts (most from the Iberian Peninsula and a few from North Africa) which were written between 1225 and 1303 on paper (or on paper to which bifolia of parchment were attached) that was undoubtedly produced in thirteenth century Spain. The paper in these manuscripts, like that of non-Hebrew manuscripts written in Spain and in the Maghreb at the same time period, reflects a mesh pattern typical of Spain before Christian Spain adopted the characteristically European paper manufacturing technology. The line patterns in these manuscripts attest, so it would seem, to a blend of Oriental and European technologies: the closely spaced laid lines are rough but straight, and the single chain lines are separate and very far apart, sometimes separated by uniform and sometimes by variable spaces (40; 40-45; 45-47; 49; 50; 60-65 millimetres).

Some of these manuscripts present the most outstanding characteristic of early Spanish papers – the markings called ‘zigzag marks’ that were inscribed with a blunt instrument on the pages margin in the shape of a fishbone. The nature of these marks is still a topic of debate.

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74 MS St. Petersburg, NLR, Евр.-Араб. I 4587.
Watermarks in Occidental paper

One outstanding element that more than any other feature characterises all Occidental paper is the watermarks (French: filigranes, German: Wasserzeichen, Italian: filigrane) embedded in them. The watermark, which allows us to identify European papermakers, was impressed in the paper by threading metal wires in the shape of the watermark, sometimes a quite complex shape, in the mesh set within the frame, and it is visible within the leaves of paper. The practice of integrating the manufacturer’s sign in the wire pattern began to gradually spread from 1282 onward. Its appearance in Occidental paper enables us to establish a highly valuable aide to dating manuscripts written on such paper by using a number of techniques to reproduce the various signs in the dated documents and manuscripts and comparing them to watermarks in undated manuscripts. The fact that no watermarks have been found in

76 The earliest watermark was found by Briquet – the greatest scholar and compiler of watermarks – in a document from 1282 in the Bologna State Archives (Briquet, Filigranes, no. 5410). In 1975 it was reported that three dated leaves from 1271 with a known watermark from the years 1314-1315 had been found in the archives of the Cremona hospital. Irigoin (‘Datation par les filigranes’, p. 9, n. 4) claims that this is a dated document that was later recopied on later paper with a documented watermark. From time to time one finds in Hebrew manuscripts non-watermarked Occidental paper from the time period in which watermarks were already customary. Briquet, in his articles (see Briquet, Opuscula) already presented examples and photographs of such Occidental paper, even from the 14th century. Irigoin (ibid, p. 15) mentions this rare phenomenon briefly, noting that either there had been no watermark originally or that it had shaken loose of the wires and slipped off. Stevenson, in his introduction to the renewed 1968 edition of of Briquet’s watermarks corpus notes that sometimes the absence of a watermark is caused by its complete detachment from the sieve, but that this should have left signs of the stitching of the watermark onto it (Briquet, Filigranes, vol. 1, p.22*)

77 It seems that by the late Middle Ages, at least, the fact that watermarks could hold a key to the dating of documents and the legal implications thereof were recognized, as attested in a Jewish source that describes the use of watermarks as evidence in a Gentile court in Germany in the first half of the 15th century. This source was revealed to me by the late Ephraim Kupfer. The following is a citation from Yosef ben Moshe, the disciple of the author of Terumat haeshen in the work Leqet yosher, which deals with the responsa of Yisrael Isserlein (Germany, 1390-1460): זכורני פעם אחת אמר <איסרלין> על הישיבה שהיה שטר שכתוב על הנייר ובא השטר לפני דיניהם והגי' היו מוכיחים שהיה השטר מזויף משום שהיה בנייר צורה אחת כמו שהדרך בכל נייר יש צורה לסימן שמכיר בו איזה אומן שעשאו ואותה צורה היה בנייר של שטר אינה זקנ' כזמן השטר, כי האומן מן הצורה אינו זקן כמו זמן (J. Freimann, ed., Leket Joscher des Joseph b. Mose, vol. 1, p. 32 cited as an example of a connection to the German legal system also in: Y. Dinari, Ḥakhmei Ashkenaz: be-shilhei yemei habeinayim, Jerusalem 1984, p. 140 [in Hebrew]).

The seeming first use of watermarks for the dating of a book during the period of Wissenschaft des Judentums, occurs in a very brief anonymous article in French about the printed books in the library of Shelomo David Luzzato, undoubtedly written by Luzzato himself, according to the use of the grammatical first person. See Hebräische Bibliographie, 2 (1859), p. 19 (the article, which begins in volume 1, was written in Padua on May 28, 1848); an image of the watermark was reproduced there at the end of the pamphlet, after p. 20. Luzzato there describes a watermark (the head of an ox) observed in a book of se'ilot, printed without mention of locality or date of printing, and he comments there (n. 3) on the ox-head watermarks in the collection of Samuel Sotheby, S.L. Sotheby, Principia typographica, vol. 3, London 1858.

78 The research literature on European watermarks is copious, and several select bibliographies have been published in a number of places, first among which is the bibliography in Part 1 of Briquet, Filigranes (1968 edition). For the practical use of a scholar of manuscripts the most important
collections are those of medieval watermarks, primarily that of Briquet, *Filigranes* – the standard corpus containing illustrations of some sixteen thousand watermarks that Briquet collected from tens of thousands of dated documents and which he classified into families of motifs, a system which became the standard classification and remains so to date. (A pdf of this corpus is available in the internet [https://doc.rero.ch/record/23217/files/ob_447_1.pdf](https://doc.rero.ch/record/23217/files/ob_447_1.pdf).) Apart from this corpus, also notable and useful is the collection dedicated (mainly) to the 14<sup>th</sup> century, V.A. Mošin & S.M. Traljić, *Filigranes des XIII<sup>e</sup> et XIV<sup>e</sup> ss*, Zagreb 1957, 2 vols. As well as the 25-volume series, each volume of which is devoted to one motif, G. Piccard, *Die Wasserzeichenkartei Piccard im Hauptstaatsarchiv Stuttgart: Findbuch*, Stuttgart 1961–1997. Piccard’s vast archive with its enormous contents of approximately 92,000 watermarks is now accessible online from the state archives of Baden-Württemberg (Baden-Württemberg Landesarchiv), which contains scans of all the watermarks, and has sophisticated search capabilities (e.g. according to the size of the watermark): [http://www.piccard-online.de](http://www.piccard-online.de). For a description of this online archive see P. Rückert, “Piccard-Online”: Die digitale Präsentation von Wasserzeichen als neue Forschungsperspektive*, Gazette du livre médiéval, 50 (2007), pp. 40–50 (where one can also find survey scans of other online collections of watermarks); P. Rückert, J. Godau & G. Maier, *Piccard-Online: Digitale Präsentationen von Wasserzeichen und ihre Nutzung* (Werkhefte der Staatlichen Archivverwaltung Baden-Württemberg, Serie A, Heft 19) Stuttgart 2007. See also, K.T. Weiss, *Handbuch der Wasserzeichenkunde*, Leipzig 1962, as well as Zerdoun Bat-Yehouda, *Papiers filigranés*. The website [http://www.memoryofpaper.eu:8080/BernsteinPortal/appl_start DISP](http://www.memoryofpaper.eu:8080/BernsteinPortal/appl_start DISP) is a portal for online collections of watermarks. It is recommended to use the sophisticated site of the Austrian Academy of Sciences, in which thousands of watermarks from manuscripts in Austrian libraries are being collected, and stored in scans of precise beta-radiography photographs [http://www.ksbm.oeaw.ac.at/wz/wzma.php](http://www.ksbm.oeaw.ac.at/wz/wzma.php). This website is linked to the main online databases as well as to the bibliographies of the printed corpora.

In using watermarks for the dating of manuscripts one must take into consideration several caveats and difficulties which have been discussed in the research literature, chiefly: gradual damage to the watermark wire as well as the constant movement of the stitching to the wire sieve, re-stitching and replacement of the wires, which of course resulted in changes to the watermark, making it difficult to identify different watermarks produced by the same wire sieve (with daily use a wire sieve would last about a year, but with repairs and re-stitchings it might also last ten years, cf. E.G. Loeber, *Paper Mould and Mouldmaker*, Amsterdam 1982, p. 5); production at a paper mill using two alternating moulds led to the creation of twin watermarks which could not be identical either initially or subsequent to changes; the lack of information indicating whether watermarks reproduced or referred to in the watermark collections were simply twin watermarks, or what were the forms of referred ‘similar’ or ‘variant’ watermarks. Watermarks that are similar to a watermark in an undated manuscript should be used as an anchor for dating, with a margin of error of at least a quarter of a century, and not necessarily as a precise means of dating, unless they are identical to unique watermarks from unique documents. The existence of different watermarks in one manuscript (analogical watermarks), which was very common in Hebrew paper manuscripts, allows a more precise dating by identifying the chronological intersection of the marks’ respective identifications. The identification of watermarks must also take into account the disposition of the laid and chain lines. According to Briquet, laid lines were very thin and dense in the 13<sup>th</sup> century, became even thinner before 1340, and were later replaced by coarser chain lines; the spaces between the chain lines in the 13<sup>th</sup> century and the beginning of the 14<sup>th</sup> century were 42–70 millimetres, and during the second half of the 14<sup>th</sup> century and the 15<sup>th</sup> century they were 28–40 millimetres; in Italy the spaces were larger where the watermark was positioned, and sometime one finds an additional chain line that supports the watermark (Briquet, *Opuscula*, pp. 315–316). For an up-to-date and concise presentation of most facets of watermark research, including the technological innovations in this research, and its online databases, see *Bull’s Head and Mermaid: The History of Paper and Watermarks from the Middle Ages to the Modern Period*, ed. P. Rückert, S. Hodeček & E. Wegner, Stuttgart–Vienna 2009, including a comprehensive bibliography. For up-to-date data regarding the chronological extent of paper use, the knowledge of which is essential for the dating of undated watermarked manuscripts, and which according to Piccard was three to four years in most manuscripts after 1360, see *ibid*. pp. 35–37, and in greater detail in A. Haidinger, “Datierung mittelalterlicher Handschriften mittels ihrer Wasserzeichen”, *Anzeiger der Phil.-Hist. Klasse*, 139 (2004), pp. 17–20. For the value of watermarks for authenticating or disproving dates in colophons, and relevant examples, see my introduction to the Neubauer and Beit-Arié Catalogue, p. xxx (= Beit-Arié, *Making*, p. 37).
in the Maghreb and in Spain) surely provides a simple and convenient criterion for quickly distinguishing between Oriental papers and European papers, and even for identifying the provenance of the manuscript – whether it was produced in the Middle East or on the European continent. This criterion, however, is not entirely valid in the fifteenth century and the first half of the sixteenth century, when Italian watermarked paper was imported on a small scale to the Near East. Indeed, some thirty Hebrew dated manuscripts from the fifteenth and sixteenth century produced in the Middle East are written on Occidental watermarked papers, and the earliest of these was written in Tel Ya’akub (near Mardin) in Eastern Turkey in 1416. Fifteen manuscripts were written during the fifteenth century in Egypt, Syria, and Palestine, especially, and a similar number were written in the sixteenth century before 1540 (the upper limit of the codicological documentation of dated manuscripts), half of them in Palestine, and the rest in Egypt and Syria. Most were written in a Sefardic script by immigrants, most likely from among the Jews expelled from Spain and Portugal.

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79 After paper manufacturing in the Middle East came to an end in the course of the 16th century (although not in its north-eastern regions) Italian paper especially produced for Muslim lands began to be imported there beginning in the 17th century at the latest. This paper was thicker than the standard paper and its glue was made of starch rather than from an animal source so that it would resemble Oriental paper as much as possible. In addition, it contained watermarks designed especially for Muslim clients which always included three unembellished and uncrowned crescents. See F. Babinger, ‘Papierhandel und Papierbereitung in der Levant’, Wochenblatt für Papierfabrikation, 62 (1931), pp. 1215–1219 [= F. Babinger, Aufsätze und Abhandlungen zur Geschichte Südosteuropas und der Levant (Südosteuropa-Schriften 3.8), vol. 2, Munich 1966, pp. 127–132]; V. Mošin & M. Grozdanovic-Pajić, “‘Crown Star Crescent’ Mark and European Export Paper”, Papiergeschichte, 13 (1963), pp. 44–51.

80 Ashtor, in writing about the Arab paper industry, whose rise and fall resembled those of both sugar and textile, presents sources showing the Venetians began to export paper to Egypt, Turkey, and Syria already at the end of the 14th century, as well as sources about the regular imports of paper to the Middle East from the beginning of the 15th century. See, Ashtor, ‘Levantine Sugar Industry’ (above, n. 68), pp. 266–277. See also E. Ashtor, Levant Trade in Later Middle Ages, Princeton 1983, p. 210, n. 63, as well as according to the index entry ‘paper’, van Koningsveld, Glossary (above, n. 12) p. 214.

81 MS Oxford MS. Heb. f.58 (Neubeuer and Cowley Catalogue 2821, fols. 105-119.) Several other manuscripts are described and presented as examples in Manuscrits médiévaux, I 114, 149, 162; II, 73.

82 These data ostensibly contradict the sources presented by Ashtor (above, n. 80). The use of Occidental paper in the Near East by immigrants from Spain suggests the hypothesis that the paper may not have been commercially imported but brought there by immigrants from Europe. And perhaps the
The disposition types of laid and chain lines in Oriental paper

The Hebrew Palaeography Project documented the visual characteristics of the paper in dated Oriental Hebrew manuscripts from all of the collections around the world, but as I noted above, it encompassed only some of the characteristics visible to the eye or when seen against a light source. This documentation includes basic morphological information about the laid lines (whether they are visible, invisible, or barely visible) and the chain lines (ditto, and when visible – what is the pattern of their distribution), without counting the laid lines within a determined width and without measuring the distance between the chain lines. In the early manuscripts prior to 1281 the direction of the chain lines in relation to the book’s height was also documented, and in the absence of chain lines the direction of the laid lines was documented. In terms of the paper’s physical properties, thickness was measured only in the early manuscripts until 1280; the phenomenon of the leaves’ splitting edges was also documented before that year, but also in the later manuscripts from the St. Petersburg libraries. In terms of the paper’s chemistry, information about the

Hebrew copyists from the Orient were reluctant, during the transition period, to use paper to which they were unaccustomed.
glossiness of the paper or of the written space only was documented. On these two phenomena, see the discussion below in the respective sections devoted to them. The overall codicological documentation of the dated Hebrew manuscripts also includes data on the dimensions of the pages, which can yield information about the dimensions of the books’ paper sheets; these data can be compared along with their correlation to the orientation of the laid or chain lines, and the relations between the width and length of the bifolia, in an attempt to reconstruct the size of the raw sheets of paper as they emerged from the papermaking moulds before they were folded and cut as bifolia for a codex.

The typology of Oriental paper’s visible structure proposed here is based on a corpus comprising 450 dated Hebrew manuscripts located in libraries around the world which were written in the Orient (including the region of Yemen) on Oriental paper. In addition, the typology occasionally draws on select data from 140 dated non-Hebrew manuscripts examined in Oxford’s Bodleian Library, most of which were written in Arabic, and a few in Persian and Syriac, and which were also produced in the Orient on Oriental paper. The data drawn from the non-Hebrew manuscripts have been presented here only when they attest to the existence of a pattern of disposition of laid or chain lines at a date earlier than that attested by the Hebrew corpus.

The earliest of the 590 manuscripts included in the corpus sustaining this attempt to characterise Oriental paper, from a ‘Hebrew’ standpoint in particular, is the oldest dated Arabic manuscript from 848, which is kept in the Alexandria regional library. In addition to it, another Arabic manuscript produced before 1000 was examined – MS Oxford MS. Hunt 228, which was written in 983. The earliest Hebrew manuscript in this corpus, and therefore the earliest dated Hebrew paper codex, was written, as mentioned above, in 1005.

When the structure of the paper is visible to the naked eye or revealed by various technologies (such as beta-radiography), three main types of paper can be distinguished among the manuscripts, as noted earlier: wireless papers, paper with dense laid lines but without chain lines, and paper with laid and chain lines nearly

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83 As presented in reference to the 11th and 12th century manuscripts in my introductions to parts 1-4 of *Codices hebraici*.
84 For earlier publications, see above, n. 61.
85 See above, n. 10, 11.
always clustered according to groups of several types.\textsuperscript{86} Distinguishing between the types and subtypes usually has an important bearing for chronological and even geographical issues; hence the codicological value of these distinctions, aside from the very knowledge of book craft and its vicissitudes that they furnish. Over time, the visual characteristics of Oriental paper underwent transformations, which of course were the product of technological developments that affected its production. In all Hebrew paper manuscripts surviving from before 1079\textsuperscript{87}, in which a wire pattern can be discerned when the leaves are viewed against a light source, the only observable lines were dense laid lines without chain lines.\textsuperscript{88} Yet in most Hebrew manuscripts in the corpus used here, whose dates fall between 1085 and 1139/40\textsuperscript{89}, and whose leaves show some measure of visible structure, both laid and chain lines can be observed. As we shall see below, most types of chain lines are distinguishable chronologically as well, and these differences are very conspicuous especially in regard to dates in which the use of the new type of chain lines began. Notwithstanding, it was not rare for chain lines of an earlier type to continue to be used alongside new types.

\textbf{a Wireless paper}

The absence of any wire patterns in the earliest dated Arabic manuscript known to us, from 848, may indicate that the early Oriental paper was produced in moulds which did not use sewn wire mesh to strain the water and dry out the pulp but rather used cloths. Yet this type of wireless paper, lacking visible laid or chain lines, was in constant use until the end of the Middle Ages. It can be seen in manuscripts produced in all regions of the Middle East, but relatively speaking, was more widely diffused in

\textsuperscript{86} Indeed, this general subdivision into three main types overlaps with the three types of moulds briefly described by Karabacek (\textit{Arabischer Papier}, p. 53), but he neither detailed nor characterised the types of chain lines (see Karabacek, \textit{Neue Quellen}, pp. 95-96). The North African, 11\textsuperscript{th} century author, Mu‘izz Ibn Badis, who wrote a work on book craft, only vaguely described the type of moulds used, in a chapter dedicated to papermaking. Karabacek prepared an Arabic edition of this work and translated it into German (\textit{Arabischer Papier}, pp. 84-112). The chapter was translated in to French: Briquet, \textit{Opuscula}, pp. 162-170; and into English: Levey, ‘Mediaeval Arabic Bookmaking’, pp. 5-79; a new translation into French, by Geneviève Humbert of the passage concerning the mould was cited by Irigoin in his article ‘Papiers non filigranés’, pp. 278-280. For other translations, see the bibliography in Le Léannec-Bavanaugh, \textit{Papiers non filigranés}, p. 103 n. 207bis*. A critical edition of the entire work in Arabic was published by ‘Abd al-Sattār al-Halwaği & ‘Ali ‘Abd al-Muhsin Zaki, in \textit{Revue de l’Institut des Manuscrits Arabes}, 17 (1971), pp. 43–172.

\textsuperscript{87} These manuscripts are described in \textit{Codices hebraicos}, Parts I-II.

\textsuperscript{88} See \textit{Codices hebraicos}, Part II, ms. 33 from 1048. Here and there chain lines, apparently single, are visible.

\textsuperscript{89} See the descriptions in \textit{Codices hebraicos}, Part III, the section devoted to these years.
manuscripts from Iran and its vicinity and Iraq: almost one fifth of Hebrew manuscripts in the corpus used here, and which were written in those localities, is made of this type of paper.

However, it should be emphasised that there is another type of paper which does not show wire patterns. It is very different in appearance and in its qualities from the paper described above, and its distribution is clear and unique in terms of time and space. This is a rough paper that is easily identified by its appearance: although it lacks wire patterns, it still presents fragmented forms in a unique chaotic arrangement, as well as traces of conspicuous fibres.

This paper was used exclusively in all Hebrew manuscripts in Yemen alone from the beginning of the fourteenth century and until the final decade of the fifteenth century, and it disappeared when Italian paper – imported to Yemen from the middle of the sixteenth century – first began to be used. The exclusive use of this type of paper in Yemen only proves that it was manufactured locally. Indeed, recently a recipe for paper making written by a Yemenite author who died in 1294 has been published. According to his instructions, the paper was produced from white fibres.

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90 According to Ariana D’Ottone’s studies of the paper in Yemenite manuscripts, the Arab copyists also used wire-patterned paper, and she even cites evidence for the importation of paper from Egypt and Syria to Yemen, see A. D’Ottone, ‘La produzione ed il consumo della carta in Yemen (secoli VI–IX H. / A.D. XII–XV) – Primi risultati di una ricerca quantitativa’, Gazette du livre médiéval, 44 (2004), pp. 39–49; idem, ‘La carta in Yemen – Osservazioni sulle provenienze e i materiali’, ibid., 45 (2004), pp. 56–58; idem, ‘Les manuscrits arabes du Yémen (VIe–IXe / XIIe–XVe siècles) – Quelques remarques codicologiques’, Chroniques yéménites, 11 (2003), pp. 67–77. See also the details about the distribution of wireless versus wire-patterned paper in a corpus she studied of 165 Arabic manuscripts from Yemen, between the 12th and 15th centuries: Idem, I manoscritti arabi dello Yemen – Una ricerca codicologica, Rome 2006, pp. 50–59. The date of the earliest wireless manuscript in her corpus is from 1179 (ibid., p. 51). Two dated Hebrew paper manuscripts that survived from Yemen from before the 14th century are written on Oriental paper: MS St. Petersburg Евр.-Араб. I 4562, written in Aden in 1114 on paper with visible laid lines and perhaps also chain lines in clusters of two; MS Berlin Ms. Or. Qu. 568, written there in an Oriental script in 1222 on paper that apparently exhibits laid lines. One can assume that from the beginning of the 14th century, Jews used only the local paper and not the imported Oriental paper, because the former was most certainly cheaper than the imported type.
from the inner bark of a fig tree.\textsuperscript{91} Perhaps in addition to the type of sieves, the unusual raw material used to produce Yemenite paper may help explain its unusual structure. Indeed, it stands to reason that the sieves used to produce both these types of paper – the type used chiefly in Iran and Iraq and the type used in Yemen – and which did not leave an impression on the sheets of paper were made of cloth rather than a weave of plant-based screen.\textsuperscript{92}

b. Laid paper
The type of paper presenting only dense laid lines – parallel or perpendicular to the folio’s height – was in early use according to the corpus of manuscripts serving as the basis for this typology. The earliest manuscript in the corpus that uses this type of paper is an Arabic one from 983 (see above). However, this type of paper too (like the type described in the previous section) was consistently manufactured and was widely used until 1500. As mentioned previously, until 1079, in all Hebrew paper manuscripts, apart from one, in which the visible structure of wire pattern is conspicuous – as few as they are – only laid lines are seen, and until 1048 the orientation of the laid line is vertical in relation to the folio’s height. This was the dominating type of paper in the Orient until circa 1250, declining thereafter in competition with the emerging and spreading types with chain and laid lines. Yet the laid lines type still constituted around a third of the dated paper manuscripts in the second half of the thirteenth century, and about a quarter of them in the fourteenth century.

Similar to the spread of wireless paper, this paper too was used in manuscripts produced in all areas of the Middle East. However, in this case, many of them were written in the north-eastern part of this region – in Iran and central Asia, Iraq, and in the nearby Western Central Asia, where it was used as the main writing material from


\textsuperscript{92} Cf. the account of a restorer stating that the ancient mould in Arabic production was a wove mould attached to a bamboo frame (H. Loveday, \textit{Islamic Paper – A Study of the Ancient Craft}, [London] 2001, p. 34).
the eleventh century on, constituting about three-quarters of all Hebrew manuscripts written there. Thus, lack of wire patterns or of chain lines characterises paper used (and surely manufactured) in those north-eastern areas. The local production of wireless paper and paper lacking chain lines continued through the sixteenth century (and later). The infrequent use of various types of chain-lined paper in those areas clearly attests to limited imports from other countries such as Syria or Egypt.

c. Laid and chain lines

Visible chain lines in Oriental paper are usually clustered in several types of groupings.

c.1 single chain lines [1/1]

Paper manuscripts showing single chain lines – as in Western paper, but with uneven spaces and frequently having a curved form – are extremely rare, and the number of clear occurrences in dated Hebrew manuscripts is only four. The earliest of these manuscripts is from 1048, and the latest from 1122.

Paper manuscripts showing single chain lines – as in Western paper, but with uneven spaces and frequently having a curved form – are extremely rare, and the number of clear occurrences in dated Hebrew manuscripts is only four. The earliest of these manuscripts is from 1048, and the latest from 1122. The spaces between the chain lines is between 30 to 50 millimetres: 30 or 35 millimetres in the 1048 manuscripts, which, as mentioned sometimes only shows single chain lines; 33-42 millimetres in a manuscript from 1106; 35-37 millimetres in a manuscript from 1122; 35-50 millimetres in a manuscript from the same year written in Alexandria by a Maghrebi scribe.

In this context, a comment concerning the type of paper in Maimonides’ autographs is in order. Of Maimonides’ Judaeo-Arabic commentary to the

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93 See Codices hebraicis, Part II, ms. 33
94 Ibid. Part III, ms. 49.
95 Ibid. Part III, ms. 61.
96 Ibid. Part III, ms. 60.
Mishna, completed in Egypt in 1167/8, four volumes containing five sedarim (orders of the Mishna) have survived in his handwriting. But not all four volumes were written on identical paper: the first two volumes (MS Oxford MS. Hunt. 117 and MS Jerusalem Heb. 4° 5703/1) were written on paper with single chain lines with a distribution of 52-56 millimetres, while the last two volumes (MS Oxford Poc. 295 and MS Jerusalem Heb. 4° 5703/2) were written on Oriental paper with laid lines only. Indeed, the dated Oriental manuscript mentioned above has single chain lines more densely spaced than those in the two first autographed Maimonides’ volumes, but in Arabic manuscripts much denser chain lines have been documented.

A hypothesis can plausibly be put forward that the source of the more widely spaced single chain line paper – and perhaps of all the unusual papers with single chain lines – is from the Maghreb.

**c.2. Grouped chain lines**

The type of paper with visible groups of chain lines appears for the first time in the manuscripts in our corpus at the beginning of the twelfth century, perhaps sometime earlier. Gradually its use increased, until it equalled that of the laid-lines-only paper. This type of paper was hardly found in Iraq, Iran or nearby western-Central Asia areas, and never in Yemen after the beginning of the fourteenth century. Everything indicates that it was produced and/or used in the western parts of the Near East—Syria, Palestine and Egypt. In light of Humbert’s findings in her article, ‘Papiers non filigranés’, the types detailed below do not exhaust all the distributions of chain line groupings, and it may be that certain variations were not noticed in Hebrew manuscripts or were

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97 According to the commentary’s colophon at the end of the order of Taharot, which did not survive in his hand, Maimonides spent seven years on the commentary and completed it in 1167/8 in Egypt, where he settled some time after he left Fez in 1165.

98 Compare the spacing of the chain lines presented above in the section on ‘Paper produced between the eleventh and thirteenth century in the Western Muslim countries (in Spain and the Maghreb) and in thirteenth century Christian Spain’. Humbert (‘Papiers non filigranés’) noted that the average spacing of single chain lines she found in the Arabic manuscripts of the Bibliothèque nationale de France was 25 millimetres, and in a small group of manuscripts the average spacing was 30-35 millimeters. In a number of Arabic manuscripts I examined personally the chain lines were also found to be densely spaced, e.g. MS Oxford MS. Poc. 110 from 1204-1207 (15-18 millimetres) and MS Oxford MS. Hunt. 125 from 1231 (15-17 millimetres).

99 Humbert (‘Papiers non filigranés’) noticed one of the grouped chain line types in one manuscript from the middle of the 11th century.
perceived as a non-regular distribution. Her findings and the inter-grouping spaces she was able to measure will be included below.

c2. (a) Chain lines grouped in pairs [2/2]
This type is the earliest of the ‘clustered’ kinds of oriental-Arabic papers. Its first clear appearance in Hebrew manuscripts and in a selection of Arabic manuscripts in our corpus is from 1113-1114. According to the Hebrew manuscripts, its peak usage seems to have been in the second half of the fourteenth century. According to the locality in which the copies were made and the style of the script in manuscripts with chain lines grouped in two, it appears to have been manufactured and consumed in the southwestern regions of the Middle East.

101 Codices hebraicis, Part III, ms. 55 (the pairs of chain lines are visible only in some of the manuscripts’ folios).

102 Indeed, Humbert believes that the source of the sieves with chain lines grouped in twos is Egypt, see her article devoted to such sieves, ‘Un papier fabriqué vers 1350 en Egypte’ (above, n. 62).

103 MS St. Petersburg Eap.-Apa6. I 3911, which was written in Cairo and contains bifolia with chain lines grouped in twos. Irigoin notes an Arabic manuscript from 1247, see his article ‘Les types de formes utilisés dans l’Orient’ (above, n. 69), p. 20.

This is the only 12th century manuscript in her corpus, and it contains only two manuscripts from the 12th century. It should be noted that irregular chain lines grouped in threes are apparently visible here and there in a few Hebrew manuscripts after 1122.

c2. (b) Chain lines grouped in threes [3/3]
This type apparently emerged in the early thirteenth century, although the earliest clear pattern was not found before 1249. However, Humbert discerned this structure, which she claims is the most prevalent in the Oriental papers in the Arabic manuscripts in the Bibliothèque nationale de France, already in a manuscript from 1058. Its extensive diffusion came much later: it dominated other types used in the western Orient in the fifteenth and the first half of the sixteenth century (when it remained as the only surviving type of chained paper).
c2. (c) Chain lines grouped in twos and threes, alternating [2/3]

This youngest type is attested for the first time in our corpus by an Arabic manuscript dated 1338.\textsuperscript{104} It was noticed however in an earlier Arabic manuscript dating from 1304.\textsuperscript{105} Only in the second half of the fourteenth century did its spread dominate all other types of paper used in the western Middle Eastern regions.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Beta-radiography_image_of_the_paper_in_Arabic_MS_JerusalemYah_Ms._Ar._306_Syria_1398_9.png}
\caption{Beta-radiography image of the paper in Arabic MS JerusalemYah. Ms. Ar. 306 <Syria?>, 1398/9}
\end{figure}

In her article, ‘Papiers non filigranés’, Humbert noted other combinations of chain line groupings: clusters with chain lines grouped in twos (and in a few manuscripts, threes) alternating with single chain lines, as well as clusters of chain lines joined to other clusters but not necessarily in an alternating pattern. Le Léannec-Bavaveas\textsuperscript{106} documented a structure of combinations of groupings of three and two non-alternating chain lines but with a symmetrical distribution: 3/2/2/3.\textsuperscript{107} It cannot be ruled out that some of the papers in Hebrew manuscripts in which the structure of the chain lines is unclear and which show different groupings are in fact papers of this type.

\begin{flushright}
\begin{footnotesize}
\textsuperscript{104} MS Oxford MS. Arab. d. 223.
\textsuperscript{105} See Baker, ‘Arab Paper Making’ (above, n. 72), p. 31 (the manuscript has been offered for purchase in a public auction). Le Léannec-Bavaveas found the alternating type in a 1314 manuscript, cf. her article ‘Les papiers non filigranés’ (above, n. 62), p. 279.
\textsuperscript{106} In her article ‘Les papiers non filigranés’ (ibid.) She too classified the types of chain lines following the same classification as ours; however, she did not notice paper without any chain lines.
\textsuperscript{107} It should be noted that in a photograph of an Indian mould (presumably a modern one) appearing in Hunter’s books, one can observe clusters of three chains with clusters of two chains at the edges of the mould. See Hunter, Papermaking, p. 88, plate 54.
\end{footnotesize}
\end{flushright}
c2. (d) Chain lines grouped in fours or fives [4/4; 5/5]

This unusual type has so far been noticed, but without certitude, in a few Hebrew manuscripts dating from the fourteenth and fifteenth century and clearly only in one Arabic codex, dated 1210 (and in other undated Arabic manuscripts). Humbert has documented three Arabic manuscripts from the end of the fourteenth and beginning of the fifteenth century, two from Baghdad and one from Shiraz, reflecting chain lines grouped in fives.

The scarce occurrence of this grouping indicates that it was used on a limited, locally produced, scale, perhaps only in the periphery (apparently Iraq or Iran).

Splitted paper in edges of leaves

One of the puzzling problems for students of Oriental paper is the peculiar feature phenomenon of the splitting of the corners and edges of Oriental-Arabic paper sheets. This phenomenon, for which a definite explanation is still lacking, was frequently observed in many recently recorded Arabic and Hebrew manuscripts from the Middle East, both the Arabic ones of the Bodleian Library, and the Hebrew codices of St Petersburg. Among the latter, which were studied more thoroughly, 146 (40%) were found to show splitting edges, or rather splittable edges. In some cases, the edges, mainly external corners, were split into three layers.

The phenomenon can be seen in paper manuscripts as early as the eleventh century until the end of the Middle Ages. It seems that it does not characterise wireless paper at all, including the peculiar Yemenite type, which may refute scholarly suggestions that such a paper was manufactured by pasting two sheets together. Indeed, the French group of scholars involved in documenting non-

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108 MS Oxford MS. Marsh. 338, a few leaves of which have a pinkish hue. This structure is also clearly visible in the pinkish leaves of two undated Arabic manuscripts, MS Jerusalem Yah. Ms. Ar. 15 (vol. 1) and MS Ar. 885.

109 Information of this type was already communicated in medieval Arabic sources. See Karabacek, Arabischer Papier, pp. 140-141 (p. 53 in the English translation). The possibility that two paper leaves were pasted together with starch is mentioned in an article on calligraphy by a 15th century Persian author, see the English translation in W.M. Thackston, “Treatise on Calligraphic Arts: A Disquisition on Paper, Colors, Inks and Pens by Simi of Nishapur”, in Intellectual Studies on Islam – Essays Written in Honor of Martin B. Dickson, ed. M.M. Mazzaoui & V.B. Moreen, Salt Lake City 1990, p. 221. This possibility is also mentioned in the research literature: Irigoin, 'Datation par les filigranes', p. 15; H. Gachet, 'Papier et parchemin', IPH Information, 16 (1982), pp. 36–41; J. Pedersen, The Arabic Book, transl. G. French, Princeton 1984, p. 66.
watermarked paper in Paris\textsuperscript{110} has noticed two types of splittable paper: the first with pasted leaves (feuillets collés), showing sieve imprints on both sides,\textsuperscript{111} and the second with double leaves (feuillets démariés), caused by the physical doubling of the pulp in a single mould, and hence showing a sieve imprint only on one side of the sheet.\textsuperscript{112} In solving the puzzle of the splitting, or splittable, Oriental-Arabic paper, however, one should pay attention to the fact that a similar phenomenon can also be observed in a few Hebrew manuscripts in the early twelfth-century Muslim Spain,\textsuperscript{113} or thirteenth-century Italy and Byzantium. Thus, this feature should be studied in comparison to the Occidental-Arabic (Spanish) paper and the pre-watermarked Italian paper.

\textbf{Byzantium – between East and West}

In regard to the regional distribution of the two main types of paper – the Oriental (‘Arabic’) paper and the Occidental (European) paper – a note should be added concerning the type of paper used in the border zone between Orient and Occident, and between Islam and Western Christianity, viz. Byzantium. The two earliest Hebrew paper manuscripts from the Byzantine region were written in 1207 and in the subsequent year by the same scribe,\textsuperscript{114} and they are made of Oriental paper without chain lines. All other extant paper Hebrew manuscripts from Byzantium stem from the 1320s and on, and they are written on watermarked Occidental paper. These data do not contradict the many findings of paper in Greek Byzantine manuscripts and

\textsuperscript{110} On this research group and the questionnaire it formulated, see above, n. 63
\textsuperscript{111} In his article ‘Papier et parchemin’ (above, n. 109) Gachet notes that the earliest dated Arabic manuscript kept in Europe (MS Leiden, Universiteitsbibliothek Or. 298, from 865, which was considered the earliest dated manuscript until the discovery of MS Alexandria – see above, n. 11) has two layers, and it was produced by pasting two leaves which were burnished only on their exterior sides.
\textsuperscript{112} According to a hypothesis put forward by Irigoin in his article, ‘Papiers non filigranés’ pp. 289-294. Irigoin wishes to prove that Ibn-Badis’ description aptly describes a floating sieve. According to Irigoin the splitting of Oriental paper was a result of using a floating sieve (which he believes was not made of plant sources but of cloth): with this technique the paper pulp dries within the floating sieve itself, and the handling of the pulp after it has dried is the cause of the splitting (\textit{ibid.}, p. 293). Data on double-leaved paper (démarié) with or without wire patterns, in Yemenite manuscripts, is presented by Arianna D’Ottone in her book on Yemenite Arabic manuscripts (above, n. 90), pp. 52-53. This information is inconsistent with the data presented by the Hebrew manuscripts. According to the documentation, apart from two manuscripts written in Yemen on Oriental paper before the 14\textsuperscript{th} century (see above, n. 90) no splitting of paper whatsoever was observed in the manuscripts written there, nor even in the manuscripts written on wireless paper in other regions of the Orient.
\textsuperscript{113} In the earliest dated manuscript from the Iberian Peninsula (see above, n. 16), written in Valencia in 1119 on paper presumably manufactured in Muslim Spain.
\textsuperscript{114} See above in the text referenced by note 22 and in the note.
documents, although they are not identical to them. According to Irigoin,\textsuperscript{115} at first Oriental paper was used in the Byzantine zone until the production of Occidental (Italian) paper became established and began to be imported to Byzantium from the middle of the thirteenth century, gradually replacing Oriental paper, which disappeared entirely toward the end of the fourteenth century. In any case, it appears that the Hebrew copyists without exception preferred Occidental paper already at the beginning of the fourteenth century.

\textbf{Sizing and burnishing the surfaces of the paper pages}

In addition to the different structures of the wire patterns imprinted in the paper, another difference among Hebrew manuscripts concerns the external appearance of the paper’s surface. This difference results from the final stage of papermaking – the sizing and burnishing that render the writing material smooth and glossy, protecting it from ink corrosion and facilitating the motion of the pen over paper. This aspect divides Hebrew manuscripts into two main groups – the Oriental-Sefardic group and the Ashkenazic-Italian-Byzantine group. This division overlaps with the division separating the zones of Islamic civilisation in the East, and partly in the West, from those of Christian civilisation. In manuscripts from the Middle East (apart from those of worn paper, like many of the fragmented manuscripts from the genizas) and in a significant portion – between a quarter and a third (the rate increases in the second half of the fifteenth century) – of the paper manuscripts written in Iberia and North Africa or by Sefardic copyists in Italy and Byzantium, the paper surfaces are very smooth and glossy. In Byzantium a quarter of manuscripts are written on sized and burnished paper, but only one tenth of them are by Byzantine copyists and the rest are by Sefardic copyists. In contrast, in the Ashkenazic zones (invariably) and in Italy (almost invariably, with the exception of fifteenth century manuscript written by Sefardic immigrants), no gloss is apparent and the paper surfaces remained somewhat rough and were unsized.\textsuperscript{116}

\textsuperscript{115} Irigoin, ‘Premiers manuscrits grecs’.
\textsuperscript{116} See the article by Glatzer (written before all the data were collected): M. Glatzer, ‘D’après des manuscrits hébreux, le stade final de la fabrication du papier et la recluse à l’aide d’un cadre’, \textit{La paléographie hébraïque médiévale – Actes du colloque international tenu à Paris du 11 au 13 septembre 1972} (Colloques internationaux du Centre National de la Recherche Scientifique 547), Paris 1974, pp. 51–53.
Within the ‘Islamic’ group, the burnishing method and the paper’s appearance differs in the Middle East and in the Sefardic zones and their offshoots. The paper in the Muslim Orient, where well preserved, is very glossy. The gloss is uniform and it covers the entire surface of the paper, indicating that the sizing was part of the process of producing the paper sheets and not a result of a post-manufacture finishing process. The paper used in the Occident was not as glossy. In a small number of Sefardic manuscripts, apparently not prior to 1435, only the written area of the page was burnished, and in a larger group – close to one tenth – the paper’s gloss was in the form of burnished stripes. Interestingly, the burnished stripes, obviously achieved by rubbing the paper with smooth stones, appear for the first time in the fourteenth century in Byzantine manuscripts, and at a scale almost equal to the scale of the phenomenon in Sefardic manuscripts. The differences in the appearance of the papers’ surfaces derive from the liquids used to glue the raw materials in the paper sheets and in the sizing, and in their methods of application and the method of the burnishing.

The burnishing of the written space, including the stripe-patterned burnishing, indicates that these finishing processes were not integral to the manufacturing process, but were performed by the scribes prior to copying.

3. Combination of paper and parchment (mixed quiring)


As mentioned, starch was used in the making of Oriental paper, whereas an animal-based glue (gelatin) was used in the making of Occidental paper. See Irigoin, ‘Premiers manuscrits grecs’, p. 194. Ibn-Badis mentions the use of limestone in the gluing process; see the English translation of his work: ‘Mediaeval Arabic Bookmaking’, pp. 39-40. Starch was also used in early Spanish papermaking, as noted by Valls i Subirà in his book Paper and Watermarks in Catalonia (above, n. 12). According to Hunter the gluing process in the Orient took place during the sizing, while in the West it took place during the soaking. Ibn Badis mentions both methods (Hunter, Papermaking, p. 194 ff.).

According to one of the manuscripts of the treatise by Ibn Badis, who lived in North Africa and whose writings may therefore reflect the technique used in the Maghreb in the 11th century, the final stage of papermaking was the burnishing of the paper with hard and smooth stones. See Karabacke, Neue Quellen, pp. 101-102. For a similar technique in Spain, see Valls i Subirà, ibid.

For scientific tests performed on the reddish hue of Oriental papers from the Geniza when seen against a light source, see V. Rouchon et al., ‘Tonalité rouge des papiers anciens observés en lumière transmise: De l’observation à l’interprétation par un modèle de diffusion’, in: Zerdoun Bat-Yehouda & Bourlet (eds.), Les matériaux du livre, pp. 55-70.

Joshua Mondshein drew my attention to this passage.
The transition from the use of parchment to paper as writing material in regions outside the Middle East is concretely embodied in manuscripts made simultaneously of both materials. Indeed, paper gradually supplanted parchment as the chief writing material, but in many manuscripts, except for those produced in Ashkenaz, the quires were composed by enfolding them in sheets of parchment. Usually, these mixed quires were composed of an outer and central bifolium of parchment, and between them were inserted paper bifolia that were folded together to form a quire (see the next chapter on quiring). In this manner, the first and last folio and the quire’s central opening were made of parchment, and all the other folios were of paper. This composition was a form of compromise between the cheapness of paper and its fragility, and the costliness of parchment and its durability. The parchment bifolia that enfolded the paper bifolia in the mixed quires protected them from erosion at the outer and inner folds of the central opening, and especially from damage that the manuscript’s use was liable to cause to the outer and central bifolia due to the close stitching of the quires. In one fifth of the manuscripts with mixed quires (36% in Byzantium) only outer parchment bifolia were incorporated in all or some of the quires; this is also the case even in the earliest manuscripts with mixed quires. In a few manuscripts only central parchment bifolia were incorporated into paper quires.

The spread of the practice of composing mixed quires depended, of course, on the scope of paper use and its spread in every region. It seems puzzling that in the Middle East, the very region in which paper became a standard writing material as early as the eleventh century, this practice was never adopted. This however may be a case in point – precisely because paper supplanted parchment in one unwavering swoop, without a transitional period, bookmakers in the Orient may not have felt the need for a compromise between the two materials. In the Ashkenazic regions too, where the use of paper spread only in the fifteenth century, the technique of mixed quiring was

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121 On this phenomenon in Latin and Greek manuscripts, according to catalogues of dated manuscripts and in Hebrew manuscripts (according to the data existing at that in time in the database of the Hebrew Palaeography Project and which were shared with the article’s authors) and in several Arabic manuscripts, see F. Bianchi et al., ‘Une recherche sur les manuscrits à cahiers mixtes’, Scriptorium, 48 (1994), pp. 259–286. On the phenomenon in Greek manuscripts, cf. J. Irigoin, ‘Les cahiers des manuscrits grecs’, in: Hoffmann (ed), Codicologie comparée, pp. 11-13.

122 In one of the latest Western manuscripts written on papyrus (from the 7th or 8th century) the external and central bifolia of the quires were made of parchment. See Bischoff, Latin Palaeography, p. 8.
The Jewish geo-cultural zones in which the custom was widespread during the fourteenth and fifteenth centuries were Italy, Byzantium, and Spain. In Italy around half of the few dated manuscripts written in the fourteenth century on paper were made of mixed quires. Mixed quires were used in sixteen percent of the hundreds of Italian paper manuscripts surviving from the fifteenth century. In fourteenth century Spain this practice is evidenced in a third of manuscripts produced on paper, and in the fifteenth century, from which many paper manuscripts survive, the proportion of manuscripts with mixed quires shrinks to one tenth. In the fourteenth century a third of paper manuscripts written in Byzantium were composed of mixed quires, and in the fifteenth century – 24 percent.

Surprisingly, the earliest Hebrew manuscript with mixed quiring was written in 1212 in נא אמון – Egyptian Alexandria – in an area where mixed quiring was absolutely unknown. However, this manuscript should not be regarded as a representative of Oriental book craft but rather of Byzantine bookmaking, as evidenced by its scripts and codicological traits, and apparently also its contents and its copyists.

The earliest manuscript from Spain with mixed quiring is from 1225. The two earliest

123 An exception among the dated Ashkenazic manuscripts is MS Berlin Ms. Or. 2° 120, written in 1436 without an indication of locality in a typical Ashkenazic script and exhibiting Ashkenazic codicological traits.

124 MS Frankfurt am Main, UB hebr. 4° 2; See E. Róth & L. Prijs, Hebräische Handschriften, vol. 1a (Verzeichnis der orientalischen Handschriften in Deutschland 6), Wiesbaden 1982, no. 3. In most of its quires (fols. 1-166) the external and central bifolia is made of parchment, but in its final section (fols.167-210) only the external bifolium of each quire is of parchment.

125 The manuscript contains a commentary on the midrash סיפרא by Hillel ben Elyaqim made by two copyists who used a Byzantine script. The senior of the two, YEHI’EL ben Elyaqim may have been the author’s brother. The manuscript’s book craft – apart, of course, from the use of local paper – is unlike that of the Orient. The author’s Byzantine origins may perhaps be deduced from the fact that no other manuscripts of this commentary survive apart from a late Byzantine copy of this very manuscript from 1520 (MS Oxford MS. Hunt 400, Neuhauer Catalogue 427), in which the copyists noted in the colophon: ‘כי היה הספר שהעתקתי מזמן דתתקע’ב ליצירה וכבר נמחק רובו וחסתי על כבוד מחברו שלא יאבד מישראל <...> כי חשבתי אין אחר כמוהו’. The senior copyist has been identified with a famous rabbinic judge (dayyan) from Fustat (first identified by Shakhna Kohlitzky in his introduction to his edition of the commentary, סיפרא de-bay Rav, Jerusalem 1960, section 10, n. 67 [in Hebrew]). The examination of the many documents written by his hand from the Geniza (see recently, M.A Friedman, ‘R. YEHI’EL b. Elyakim’s Responsum Permitting the reshut’, in Mas’at Moshe: Studies in Jewish and Islamic Culture Presented to Moshe Gil, eds. E. Fleischer, M.A. Friedman, and J.A. Kraemer, Jerusalem 1998, pp. 328-367 [in Hebrew]) shows that they were written in a script that was very similar to that of YEHI’EL b. Elyaqim, and that therefore the senior copyist should be identified with the dayyan from Fustat. This does not rule out the possibility that he was the brother of the author, and in any event, it is clear from both the script and the book craft of MS Frankfurt that it stemmed from the hand of the copyist from Byzantium.

126 MS Jerusalem Yah. Ms. Heb. 1 is the earliest Sefardic manuscript written on Spanish paper produced in the Occidental technique (with single, regular, and uniform chain lines). This manuscript, in which only the external bifolia of its quires are of parchment, nicely illustrates the vulnerability of the paper versus the durability of parchment – of its first three quires only the external parchment bifolia remain and the rest have been lost. See Manuscrits médiévaux, I, 2. The next-to-earliest
In manuscripts from Italy with mixed quiring (also with only outer protective parchment bifolia, unlike the Egyptian and Spanish manuscripts mentioned earlier) were produced in Rome by the same copyist in 1311/2 (one does not note the month and therefore it may have been completed already in 1311, and the second was signed in 1312). However these manuscripts are not in an Italian script but in a Sefardic type script with Byzantine elements, and it is clear that their copyist was not local. The earliest manuscripts with mixed quires and Italian scripts derive from 1330 and 1331, and both were produced by the same copyist. One mixed quires manuscript written in the Byzantine zone has survived from the same year, 1331, but it should not be forgotten that the earliest mixed manuscript, written in Alexandria in 1212 is Byzantine, and perhaps the custom of composing mixed quires in Hebrew manuscripts was not only more widespread in Byzantium but may perhaps have begun there.

Data on the use of mixed quires, collected by Bianchi and others from a partial survey of Latin and Greek and a few Arabic manuscripts diverge from the data collected from the Hebrew manuscripts. According to this partial survey, it seems that the technique of mixed quiring was used by Hebrew copyists to a much greater extent than it was by Latin and Greek, and apparently also Arabic copyists. Even the geographical distribution of the mixed quires is different, because most of these Latin manuscripts were actually produced in zones in which the technique was not at all in use in Hebrew manuscripts – France, Germany, and England. Moreover, the aggregated data indicates that the use of mixed quiring in Hebrew manuscripts preceded its use in non-Hebrew manuscripts in all zones except for Spain. Dated Latin

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127 MS Paris Hébreu 976. The manuscript was not included in *Manuscrits médiévaux*, which includes all of the dated manuscripts in libraries in France (and Israel), because of doubts regarding the validity of the date of the copying. These doubts were dismissed once it became clear that the other manuscript, MS Parma mentioned in the next note, was copied by the same scribe.

128 MS Parma Parm. 2395 (De-Rossi Catalogue 728); for the identification of the copyist see the Richler & Beit-Arié Catalogue (Parma).

129 In the colophon of MS Paris he notes that he had made the copy at the time he was a student at R. Yo’av’s beit-midrash (fol. 64v), and it may be that his purpose in coming to Rome was to study at this institution.

130 MS Munich, BSB Cod. Hebr. 111, written in 1330, and MS Vatican Neof. 29, written in Tivoli in 1331 (in which there are only two mixed quires). Part of this manuscript was written by two other copyists. See Richler & Beit-Arié Catalogue (Vatican), pp. 549-551.

131 MS St. Petersburg Evp. 1 479. A localised mixed manuscript has survived from 1335-1336: MS Leiden, University Or. 4760 – Warn. 22 written in Edrine. The manuscript’s scribe allowed three junior scribes (perhaps his sons?) copy short passages.

132 Above, n. 121.
manuscripts with mixed quires are found only in the end of the thirteenth century, and the dates in Greek Byzantine manuscripts of this type are later than the Hebrew witnesses. Furthermore, the aggregated data show that in all zones, apart from Spain, the Hebrew manuscripts preceded non-Hebrew ones in their use of mixed quiring. The mixing of paper and parchment was practiced in Spain also by Latin copyists. It is therefore reasonable to assume that the technique derives from Spain whence it spread to other zones.

Sometimes the technique of wrapping the paper quires with parchment bifolia was implemented in Spain and Italy with thrift. Instead of protecting the outer fold and inner opening with parchment bifolia, they were reinforced by thin strips of parchment which were pasted along the back and inner fold of the quire’s central bifolium and sewn together with the quire’s bifolia. This greatly reduced the cost of production without relinquishing the main purpose of mixed quiring, which was to protect the inner and outer bifolia from damage that might be cause by the tightness or looseness of the quire’s stitches. It appears that the most vulnerable fold was the

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134 Van Koningsveld, Glossary (above, n. 12) p. 24. Van Koningsveld suggested that the technique evolved from the earlier practice of Arab scribes to copy a short work (or part of a work) in a single, independent multi-bifolium quire called ُجُز (ğuz’). This term and its derivatives – ُجيِّز, ُجيَّز, ُجيِّزَيَن, يُجِزَيِّز – in the sense of a volume or a section occurs frequently in Hebrew booklists in Judaeo-Arabic from the 12th and 13th centuries in the Cairo Geniza (See Allony, Jewish Library, e.g. in list no. 27, frequently on p. 100, and many more occurrences). Because medieval sources note that in North Africa these kinds of independent quires were wrapped in parchment, van Koningsveld assumed that they used to be assembled into a single volume, and following this early practice eventually copies came to be made in Spain by using mixed quires for producing continuous texts in the codex form. For a number of explanations of the ُجُز form, especially its role in disseminating texts, see G. Humbert, “Copie “à la pecia” à Bagdad au IXe siècle?”, Gazette du livre médiéval, 12 (1988), pp. 12–15; idem, ‘Le ُجُز’ dans les manuscrits arabes médiévaux’, in Scribes et manuscrits du Moyen-Orient, ed. F. Déroche & F. Richards, Paris 1997, pp. 78–86.

135 Among the Latin paper manuscripts produced in Spain, the use of this technique appears already for the first time in the earliest manuscript MS Paris Nouvelles acquisitions lat. 1296. See Briquet, Opuscula, p. 47; van Koningsfeld, Glossary (above, n. 12), pp. 68–70, n. 89.

136 This technique was already used by early Latin copyists when making codices out of papyrus. See Bischoff, Latin Palaeography, p. 8, n. 8. Its purpose was to protect the stitching of the quires. For this practice in Greek Byzantine manuscripts, see Irigoin, ‘Premiers manuscrits grecs’, pp. 221–222, n. 7. A similar method was found in the Coptic Gnostic codices discovered in Nag Hammadi in Egypt, which were made of multi-leave papyrus quires. Two pieces of parchment were found, one for each seam, in the quires’ openings, to protect from the sewing threads. In codex VII one long shared piece, 9 centimetres in length, was found, used to reinforce the back of the quire. See J.A. Robinson, ‘The Construction of the Nag Hammadi Codices’, in Essays in the Nag Hammadi Texts in Honour of Pahor
innermost one in the central bifolium, because in the Hebrew manuscripts where this thrifty technique is observed the reinforcing of the inner fold was preferred to the reinforcing of both folds. In a few cases parchments strips were found pasted only to the back of the folded quire. Either way, the phenomenon has been documented in only a few manuscripts and it may have escaped our observation, especially at the early stages of documentation. It should also be remembered that the parchment strips were lost over the years, when manuscripts were taken apart to for re-binding. The geo-cultural distribution of the practice of reinforcing the quires with parchment strips is parallel to that of the practice of reinforcing them with entire parchment leaves – Spain, Byzantium, and Italy. The first findings of reinforcing strips were from Spanish manuscripts. In Byzantium they were first found in dated manuscripts from the end of the 1360s and the 1370s, and in Italy from around the same time. The existence in Ashkenaz of several manuscripts with reinforcing parchment strips in paper quires, where, as mentioned, mixed quires were not in use, proves that the use of this technique was not an evolution of a thrifty version of mixed quiring. This can also be clearly concluded from the technique of parchment strips employed in Latin manuscripts from France.

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138 The earliest of these is a non-localised manuscript from 1282 (MS London Add. 27113, Margaliouth Catalogue 926); the next one is a localised manuscripts from Spain (Ubeda) – the second manuscript from Spain whose external bifolia are made of parchment (see above, at the end of n. 126), but a few of its quires were reinforced in the minimalist manner.

138 Carla Bozzolo and Enzio Ornato found reinforcement strips in twenty percent of the many manuscripts they examined. See Bozzolo & Ornato, Codicologie quantitative, p. 133. See also Muzerelle, Vocabulaire codicologique; Lemaire, Codicologie, p. 43.
Tables 14-16: Distribution of writing materials until 1500

On the basis for the statistical calculations in the tables below, see above in the introduction in the section on the ‘General statistics of the database’ (at the top of table 5).

The following notations occur in tables 14-16:

(1) parchment  (2) paper  (3) mixed: parchment and paper (external parchment bifolia or external and internal parchment bifolia in a quire

# the number of manuscripts  % percentage

**Table 14: Geocultural distribution of the writing material in manuscripts before 1500**

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**Table 15: Chronological distribution of the writing material**

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Table 16: Geo-chronological distribution of the writing material

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</tr>
</tbody>
</table>
Size and formats

In truth, the topic of the codex’s size and mise en page\textsuperscript{139} deserves a chapter unto itself. Topics concerning the page’s dimensions and their numerical relations to the paper or parchment sheets belong partly here and partly in the next chapter on quiring; topics concerning the dimensions of the written area and their internal relationships or the relations of those dimensions to the page’s dimensions and the columnar layout of the text properly belong in the chapter on ruling. However, since these two aspects are interdependent and dictated by the dimensions of the parchment or paper sheets, I saw fit to present them briefly here – briefly, because the topic has still not been sufficiently studied in Hebrew manuscripts.\textsuperscript{140} Indeed, data on the dimensions of the page, the dimensions of the written area and of the four surrounding margins in the dated manuscripts (or manuscripts including the copyist’s name) have been collected, and they are included in the SfarData database. Moreover, the database also presents calculations of the relationships of these elements to each other in each manuscript, including the important correlations for regional and chronological characterisations of the books’ production and design, and perhaps also for the characterisation of the textual genre, viz. the ratio of page’s width to its height,\textsuperscript{141} the ratio of text’s width to its height\textsuperscript{142} and the ratio of the written area to the total area of the page. It goes without saying that manuscripts written on parchment must be distinguished from those written on paper (or on mixed parchment and paper) whose dimensions are

\begin{itemize}
\item \textsuperscript{139} Mise en page (the design of the page of writing material: its size and the ratio of width to height), Mise en texte (the disposition of the text: its layout on the writing material, or actually on the symmetrical page opening). For an exhaustive review of the guidelines and recipes for deciding the ruling proportions, which occur in Latin and Greek manuscripts, their analysis and an examination of their application in Latin and Greek texts, as well as detailed references to studies that discuss the layouts of manuscripts (including Latin and Arabic manuscripts), see M. Maniaci, ‘Ricette e canoni di impaginazione del libro medievale – Nuove osservazioni e verifiche’, Scrineum Rivista, 10 (2013), pp. 1–48 [www.fupress.com/scrineum].
\item \textsuperscript{140} In the meantime, one may consult the attempt to rely on the dimensions of early Oriental Bibles made of parchment, and their width to height ratios, to identify the Pentateuch codex known as כתר دمشق in my introduction to its facsimile edition: M. Beit-Arié, ‘Codicological and Palaeographical Description’ in The Damascus Pentateuch – Manuscript From About the Year 1000 Containing Almost the Whole Pentateuch, vol. 2, ed. M. Beit-Arié (Early Hebrew Manuscripts in Facsimile 2) , Copenhagen 1982, p.8 [= Beit-Arié, Makings, pp. 116-117]. For the calculation of the dimensions of the sheets of Oriental paper and the reconstruction of their manner of folding (based on the direction of the chain lines in the codex’s pages) in early Hebrew manuscripts from the 11\textsuperscript{th} and 12\textsuperscript{th} century, see my introductions to Codices hebraicis, Parts I-IV (in Part I, the section on ‘Size and Layout; in Parts II-IV the section on ‘Writing Materials and Formats’).
\item \textsuperscript{142} Gumbert did not examine the relation of the sizes to the written areas.
\end{itemize}
dictated by the size of the parchment or paper sheets, but whose width to height ratios – especially those of the written area – are likely to be similar. No doubt, the dimensions of the page in the manuscript are of typological and chronological value, as are the dimensions of the written area and the ratio of the dimensions of the written area, which can be easily measured and calculated. Yet, it must be kept in mind that the margins of the manuscripts were reduced to a great extent in the process of repeated re-bindings, and only the dimensions of the inner margins remain intact. The height dimension of books was distorted to a larger extent than was the width dimension, because the height was trimmed at both upper and lower margins, whereas the width was only trimmed on the outer margins, and consequently the ratios of the page dimensions change either little or considerably. In addition, one must take into account the change in the dimensions of the page because of the shrinking of the parchment over time (this is clearly visible in mixed quires of parchment and paper).\textsuperscript{143} For the above reasons, the width to height ratio of the written area is the more reliable measurement.

Examination of the shapes, dimensions, and proportions of the codex’s pages and of the text’s disposition in columns may therefore provide a codicological criterion which can help identify the provenance of a manuscript and estimate its date. Several examples, all deriving from parchment manuscripts, may be presented even at this stage of research. In the oversize biblical codices that characterize the Middle East during the first century of the spread of the Tiberian version (the tenth century), for example, the codex’s leaves width to height ratio is 0.82-0.92,\textsuperscript{144} and the width to height ratio of the text is 0.46-0.58. In the many oversize Ashkenazic codices, especially Bibles, mahzors, and halakhic works produced in Germany and to a lesser extent in France from the end of the twelfth until the middle of the fourteenth century\textsuperscript{145} their width to height ratio and the width to height ratio of the written area are different from those of the early Oriental codices: in scores of Ashkenazic manuscripts whose height is 400 millimetres or more the width to height ratio of the pages is 0.63-0.79, and the width to height ratio of the written area is usually similar 0.62-0.74 (a design that may conform to the vertical emphasis embodied and

\textsuperscript{143} See Glatzer, ‘Aleppo’, pp. 188-190.
\textsuperscript{144} Some of these differences in size should presumably be attributed to the degree of trimming of the upper and lower margins during the re-binding of the manuscripts.
\textsuperscript{145} The Erfurt Bible was written in Germany in 1343, and its dimensions are apparently larger than those of any Hebrew manuscript (629×470 millimetres). On this Bible codex, see below, chapter 4, n. 8.
accentuated in the Gothic style). The typical dimensions of parchment manuscripts from Spain and Provence are similar to those found in the Orient, and they tend toward a square format. Small-dimensioned codices with an oblong format (i.e. whose width is greater than their height) among early Geniza fragments and North African codices are similar to the preceding or coterminal Arabic manuscripts. One may similarly note the typical dimensions of Italian manuscripts, and their vicissitudes

146 According to Gumbert, in his article ‘Sizes and Formats’ (above, n. 141), 0.7 was the preferred ratio in Latin manuscripts from the late early period until the end of the Middle Ages.

147 For example in the Geniza fragments of a biblical text written in Iran in 903/4, which is the earliest manuscript whose date is not in doubt (see Codices hebraicis, Part I, ms. 2). In this manuscript the ratio between the page’s dimensions is equal to the ratio between the dimensions of the written area – 1.08. For biblical manuscripts of small dimensions from the early 11th and early 12th century, which contained only one portion (parasha) of the Pentateuch (similar to Kufic Qur’ans which contained single suras), whose dimensions, mise en texte, and ornamentation demonstrate that they were produced in Iran, see Codices hebraicis, Part III, ms. 50. Cf. Sirat, Hebrew Manuscripts, pp. 117-119, and see ibid. the description of the only Hebrew papyrus codex (that survived in the Geniza), with a width of 230 millimetres and a height of 215 millimetres.

148 E.g. MS St. Petersburg Евр. II B 338 from 1276/7 (the ratio of the pages’ dimensions is equal to the ratio of the dimensions of the written area – 1.14).

149 The extended pen strokes of the early Kufic script apparently dictated the reversal of the ratio between the height and width dimensions in most of the early Qur’ans produced in the 9th and 10th centuries. See M. Lings & Y. H. Safadi, The Qur’an – Catalogue of an Exhibition of Qur’an Manuscripts at the British Library, 3 April–15 August 1976, London 1976, p. 17; Déroche, Manuscrits du Coran, p. 19. Déroche noticed that the width of the written area in most of the Kufic fragments in his catalogue is 70 millimetres more than the height of the written area (50 millimetres in small formats). See. Ibid. the instructive table of the dimensions of the written area of all the manuscripts presented in plate XXIV. Déroche proposed that the transition from the vertical format to the wide format took place in the early 8th century. F. Déroche, ‘Inks and Page Setting in Early Qur’anic Manuscripts – A Few Unusual Cases’, in From Codicology to Technology: Islamic Manuscripts and their Place in Scholarship, ed. S. Brinkmann & B. Weismüller, Berlin 2009, p. 86, and cf. ibid. the plates of early Qur’an fragments from the Damascus Geniza. The dimensions of the biblical codices that were produced in the Middle East were of course much greater and their height was always greater, at least to a slight degree, than their width, as in the vertical form of the Qu’rans in the early Hijazi script which is associated with the 7th and 8th centuries (see Déroche, Manuscripts du Coran, pp. 19, 50).

The wide format of Qur’ans in the Kufic script was abandoned in the 11th century (see M. Lings, The Qur’anic Art of Calligraphy and Illumination, England 1976, p. 18). The dimensions, mise en text, and ornamentation of the small size manuscripts that contain a single portion of the Pentateuch, like the Kufic Qur’ans that contained single suras and were produced in Iran in the 11th and 12th centuries, attest to the powerful influence Arabic calligraphy had on the design of Hebrew manuscripts. Cf. Codices hebraicis, Part II, 2. Despite the great similarity to Kufic Qur’ans the format of the Hebrew manuscripts and even the layout of the script are not wide. The Kufic Qur’ans were always written in one column, whereas the Oriental Hebrew codices were usually laid out in three narrow columns, presumably so as to have the codex opening mimic the appearance of the columns in a Tora scroll when rolled out for reading, and only sometimes were two columns written (this may have depended on the area in which the manuscript was produced) like the Syriac or Greek biblical manuscripts. Unusual among the early Greek Bibles are two 4th century manuscripts: the oversize Codex Sinaiticus, which is similar to Hebrew biblical codices, and which has four columns, and Codex Vaticanus, which is written in three columns. See E.G. Turner, The Typology of the Early Codex, [Philadelphia] 1977, cf. Table 16 on p. 134 and Plates 25-26 in Mise en page et mise en texte du livre manuscrit, ed. H.-J. Martinet & J. Vezin, [Paris] 1990, pp. 62–65. It is interesting that in the four columned Codex Sinaiticus, the books of Job, Proverbs, and Psalms were written in two columns the way they are written in Hebrew biblical codices, a fact that might reflect the influence of the Jewish custom and validate Milne and Skeat’s conclusion that Codex Sinaiticus was written in Caesarea, cf. P. Mayerson, ‘Codex Sinaiticus – An Historical Observation’, Biblical Archaeologist, 46 (Winter 1983), pp. 54–56.
throughout the periods, and attribute these to the genre of the copied text, by comparing them with the dimensions of Latin codices. This type of quantitative classification of dated manuscripts from Italy shows, for example, that in most codices that do not hold large scale works the Italian copyists and owners preferred to produce manuscripts of relatively small dimensions.

In recent years, a trend has developed in Latin codicology to present the dimensions of manuscripts by means of a formula\(^{150}\) that expresses the height and width dimensions as a single value, enabling a more efficient process of classifying manuscripts.\(^{151}\) This has led to the introduction of the term \textit{taille} – size – a term combining the dimensions of height and width. The SfarData database calculates size in the specification of dimensions and their ratios, but these data have not been used for typological purposes.

The term ‘format’, which is often mistakenly used to refer to dimensions, concerns the reconstruction of the dimensions of the raw sheets of parchment or paper, and their manner of folding, as well as the number of folds used to prepare quire bifolia\(^{152}\) (for the meaning of ‘bifolia’, see the next chapter).\(^{153}\) The topic of formats has also hardly been investigated in Hebrew codicology.\(^{154}\) In the next chapter, we will comment on the lack of evidence of quiring by means of folding parchment sheets in Hebrew codices, and stress that the ratio of bifolia width to height is preserved with each folding of the parchment or paper sheet.


\(^{151}\) See, recently, D. Muzerelle, ‘Pour revenir sur et à la “taille” des manuscrits’, \textit{Gazette du livre médiéval}, 50 (2007), pp. 55–6. But cf. Gumbert’s proposal (J.P. Gumbert, ‘Livre grand, livre petit: Un problème de taille’, \textit{Gazette du livre médiéval}, 38 [2001], pp. 55–58) to rely only on one dimension – the height of the manuscript – to classify the sizes of manuscripts, because of its simplicity and transparency, and because the dimensions of Latin manuscripts are concentrated within a short range, and Muzerelle’s response (\textit{ibid.}).

\(^{152}\) See both of Gumbert’s above-cited articles (n. 141), and also his article ‘Skins, Sheets and Quires’ (below, chapter 4, n.9, which includes references to additional literature dealing with the forming of quires by folding the sheets of parchment), and see additional concise and exhaustive explanation of the terms in Gumbert, \textit{Words for Codices}, sections 312.0, 312.1.

\(^{153}\) Gumbert (\textit{Words for Codices}, section 312.1) distinguishes between ‘material format’ (the ratio between the folio and the sheet of writing material) and ‘working format’ (reconstruction of the way in which the s bifolia and their folioswere produced to achieve this ratio).

\(^{154}\) With the exception of the paper moulds in Oriental manuscripts mentioned above in n. 140. In respect to the formats (moulds) of the manuscripts themselves, we will comment on lists of books that were copied and offered for sale by Yosef Rosh HaSeder in Egypt at the end of the 12th and beginning of the 13th century. In many of these book entries, Yosef Rosh HaSeder, who used Baghdadi paper for his copyings, noted the manuscript’s format – quarto or octavo (i.e. folios formed by folding the sheet of paper either two or three time), see. Allony, Jewish Library, nos. 97, 99, 101, 112.
The manner of folding sheets of Occidental paper of the ‘Chancery’ type


Formats and dimensions of Bolognese Occidental paper and their folding into bifolia


<table>
<thead>
<tr>
<th>‘Official’ Bolognese paper sizes</th>
<th>sheet</th>
<th>folio</th>
<th>quarto</th>
<th>octavo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>73 × 50</td>
<td>50 × 36</td>
<td>36 × 25</td>
<td>25 × 18</td>
</tr>
<tr>
<td>Royal</td>
<td>61 × 44</td>
<td>44 × 30</td>
<td>30 × 22</td>
<td>22 × 15</td>
</tr>
<tr>
<td>Median</td>
<td>49 × 35</td>
<td>35 × 24</td>
<td>24 × 17</td>
<td>17 × 12</td>
</tr>
<tr>
<td>‘Chancery’</td>
<td>44 × 31</td>
<td>31 × 22</td>
<td>22 × 15</td>
<td>15 × 11</td>
</tr>
</tbody>
</table>
One can easily discern the format and number of foldings of manuscripts written on Occidental paper according to the direction of chain lines and embedded watermarks, as shown below (the figures are taken from D. Muzerelle, *Vocabulaire codicologique: Repertoire méthodique des termes français relatifs aux manuscrits*, Paris 1985, Figs. 40, 42, 45):

In folio-size manuscripts, whose bifolia overlap with a paper sheet folded once, the chain lines will appear parallel to the length of the page and the watermark will appear fully in one of every pair of bifolia, in other words in half of the quire’s bifolia.

In quarto-size manuscripts, whose bifolia are created by folding the sheet twice, the chain lines will appear as perpendicular to the length of the pages and the watermark will appear on either side of the bifolia’s opening bisected by the middle fold, and if the bifolia were quired regularly and continuously with paper sheets, the halved watermarks will appear in half of the quire’s bifolia.

In octavo-size manuscripts, whose bifolia were created by folding the paper sheet three times, the chain lines will appear parallel to the lengths of the bifolia, and quartered watermarked will appear on the upper margins of the pages destined to be trimmed for binding, and they will appear in regularly arranged quires on half of the quire’s bifolia.

It should be recalled that like the printers, copyists too could compose quires by folding and cutting half-sheets and even quarter-sheets of paper. The composition of
quires by systematically folding sheets is of course appropriate for printing, but not for manuscripts, and certainly not for Hebrew manuscripts in which quiring practices were usually based on odd numbers. The distributions of watermarks in Hebrew manuscripts demonstrate a use of sheets of paper with differing watermarks within the same quire. Undoubtedly, the copyist folded, cut, and stacked the sheets in no particular order, and later took a few sheets from the stack according to his needs and local custom.

4. Ink

A comprehensive work devoted to book craft, should of course include information, even minimally, about the ink used in medieval Hebrew manuscripts. Since the topic of ink is presented here only in the utmost brevity, it is not treated in a chapter unto itself, and the brief discussion here is therefore appended to the chapter on writing materials.

![A scribe’s portable kit/ for writing instruments made of bronze, found in Ein-Gedi in 2003, and deriving from the Ummayid period: a long tube case for the quill, to which is attached an inkwell with a lid, inside of which remains of mixture used to produce black ink survived. Inside the tube were found a short chain and bronze staff/stick. A chain attached to the inkwell lid functioned apparently to prevent it from getting lost, and to attach the equipment to the scribe’s belt as he walked. Nearby the instrument, a small glass phial was found. A detailed description, a discussion of ink in antiquity and of similar instruments found in Palestine and Egypt, see, R. Porat, H. Eshel & A. Frumkin, ‘A. Bronze Scribe’s Case from En Gedi’, IMSA, 6 (2007), pp. 3–12.](image)

Generally, charcoal ink, whose chief ingredient is charcoal, is distinguished from iron-gall ink, whose chief ingredient is iron sulfate. Charcoal ink was used in ancient Egypt, in the Hellenistic world, and in Rome, including, as shown by chemical

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155 For a brief summary of the information about the composition of ink in antiquity in the Middle East and in the Classical world, see M. Haran, ‘Book-Scrolls in Israel in Pre-Exilic Times’ (above, n. 6), pp. 75-80. A book by Monique Zerdoun Bat Yehouda is devoted to the various compositions of charcoal ink and their vicissitudes in the cultural traditions of the Far East and the Middle East, according to literary sources and recipes in the Jewish halakhic literature and Muslim legal literature, see M. Zerdoun Bat-Yehouda, Les encres noires au Moyen Âge jusqu’à 1600, Paris 1983 (repr. 2003).
During the second century, so it seems, iron-gall ink began to be produced based on iron and tannin derived from gallnuts – growths appearing on plants (such as the oak or the terebinth trees) as a result of the parasitic activity of insects and larvae. Evidence for the use of iron-gall ink for the writing of Tora scrolls, *tefillin*, and *mezuzas* appears already in the time of the fourth generation of Tana’im in a *baraita* of the Babylonian Talmud:


157 According to the scan of MS Munich, BSB Cod, hebr. 95, on the library’s website. The term for iron sulfate – a loanword from the Greek χάλκανϑός appears in this *baraita* and in other locations in the Talmud and Tosefta with variant spellings – קנקנתום, קנקוס, קנקוסוס (according to the database of text witnesses of the Babylonian Talmud at The Saul Lieberman Institute of talmudic Research [The Sol and Evelyn Henkind Talmud Text Database] and in manuscripts of the Tosefta, see Lieberman’s edition of T. Shabbat 11:18, in S. Lieberman *Tosefta according to Codex Vienna, Seder Mo’ed*, vol. 2, New York 1961/2, p. 50 (in Hebrew). See the references to discussions of this term in S. Lieberman, *Tosefta ki-fshuta, a comprehensive commentary on the Tosefta*, vol. 3: Seder Mo’ed: Shabbat, New York 1961/2, p. 182 (in Hebrew). In his Code (Mishe Tora, Sefer Ahava, Hilkhot Tefillin, Mezuza and Sefer Torah, 1:4) Maimonides describes the process of producing charcoal ink for the ritual writing of tefillin, mezuzas and Tora scrolls, although he does not rule out the use of iron-gall ink: “How is the ink prepared? The soot of burning oil, or of tar, or of wax and the like, is collected and kneaded with tree sap and a little honey; it is then drenched, crushed, formed into the shape of thin pancakes, dried out and put aside. When it is needed for writing, it is soaked in gallnut extract or something like it, and then used for writing. Such ink can be thoroughly erased. This ink is the choicest for the writing of Torah scrolls, tefillin, and mezuzot. But if any of the three were written with gallnut extract or with vitriol, even though such writing is permanent and cannot be erased, it is fit”. (The Code of Maimonides, Book Two: The Book of Love, tr. M. Kellner, New Haven & London 2004. Indeed medieval ink was produced as a dry substance that was diluted with liquid for the purpose of writing.

Ink manufacture in the Orient apparently continued to be based on charcoal, which causes the ink in most extant Oriental manuscripts to appear black (or grey), whereas the colours of the ink in manuscripts written in Europe with iron-gall ink, which
initially was also black (because of the mixture of tannin), gradually faded over the years turning into shades of brown, with the iron ink sometimes consuming the writing material. However, recent studies demonstrate that iron ink was also used in Oriental manuscripts (see below). Documentary sources from the Geniza concerning ink have been collated by Goitein, and they indicate that usually the ink was not made by the scribe but purchased from a specialist in ink manufacturing.

Recently, non-invasive optical and chemical tests of the ink in medieval manuscripts have been performed, some based on spectrographic analysis and some on X-ray fluorescence, and these may provide precise information about the compositions of inks in various regions and time periods, and may even reveal changes in the ink within different layers of the same manuscript. Lately, inexpensive, portable, and user-friendly, spectrographic instruments have been developed which allow tests to be performed rapidly. A recent publication surveys these various testing techniques, their respective advantages, and the results they are capable of furnishing.

One such portable optical instrument, the Dino-Lite AD413-12V, a USB multispectral electronic microscope that produces light waves of varying wavelengths, ranging from a short ultra-violet to a long infra-red wavelength, allows one easily to distinguish charcoal ink, whose colour is visible under infra-red lighting, from iron-gall ink, which pales or becomes completely invisible under the same lighting.

In 2014, at the initiative of the chemist Ira Rabin, and with her assistance, I selected a small sample of (mostly Hebrew) manuscripts in the collection of the National Library of Israel, which were examined with the abovementioned instrument. All of the European manuscripts in the sample that were examined revealed the use of iron-gall ink: MS Heb. 8° 4120, written in Italy in 1282, shown in the figure below: MS

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Heb. 8° 1403/3, written in Saragossa in Spain in 1341; MS Heb. 8° 6330 written in Germany in 1366/7 and MS Heb. 4° 1114, written there in 1419. The results of the testing of the Oriental manuscripts were surprising. Most were written in iron-gall ink, a few perhaps with a mixture of soot, and a minority of them used charcoal ink: MS Yah. Ms. Ar. 966, a Pentateuch known as ‘The Damascus Keter’, undoubtedly written in Palestine in the tenth century is written with iron-gall ink; MS Heb. 4° 5703/2, Maimonides commentary on the Mishna’s order of Nashim is written in his own hand in iron-gall ink. In contrast, only two manuscripts from this limited sample were found to be written in charcoal ink: MS Heb. 8° 2238, a decorated Pentateuch portion (‘Shelah Lekha’, from the Book of Exodus), written in Iran in 1106/7, and MS Yah. Ms. Heb. 6, written in al-Tawila, Yemen, in 1359.

MS Jerusalem, NLI Heb. 8° 4120 <Italy> 1282, fol. 38v. Iron-gall ink

NIR (Near-Infrared)

MS Jerusalem Ms. Or. 838, Jerusalem, early twentieth century. Charcoal ink.
Ink of Hebrew manuscripts in Jerusalem, National Library of Israel

<table>
<thead>
<tr>
<th>MS</th>
<th>Place, date</th>
<th>VIS</th>
<th>NIR</th>
<th>ink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maimonides autograph Heb. 8° 6295</td>
<td>Cairo, ca.1165</td>
<td></td>
<td></td>
<td>Iron gall</td>
</tr>
<tr>
<td>Heb. 8 6295</td>
<td>Aleppo 1236</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yah. MS.Heb. 6</td>
<td>Al-Twila (Yemen) 1359</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Heb. 8° 2238</td>
<td>&lt;Iran&gt; 1106/7</td>
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</tr>
<tr>
<td>Yah. MS Ar. 966 (Koran)</td>
<td>&lt;mid 9th cen.&gt; revocalised 904/5</td>
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<tr>
<td>Heb. 4° 5703/2 (Bible)</td>
<td>Palestine &lt;10th cen.&gt;</td>
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</tr>
<tr>
<td>Heb. 8° 1493/3</td>
<td>Saragossa (Spain) 1341</td>
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<td>Heb. 8° 4210</td>
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<tr>
<td>Heb. 4° 6330</td>
<td>Germany 1366/7</td>
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<tr>
<td>Heb. 4° 1114</td>
<td>Germany 1419</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syrian handwriting by a scribe-monk, Jerusalem 1992</td>
<td></td>
<td></td>
<td></td>
<td>carbon</td>
</tr>
</tbody>
</table>

Ink of Hebrew manuscripts in Berlin, Staatsbibliothek zu Berlin (Preussischer Kulturbesitz)

<table>
<thead>
<tr>
<th>MS</th>
<th>Place, date</th>
<th>VIS</th>
<th>NIR</th>
<th>ink</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS. Or.Oct 258</td>
<td>Baghdad, 1341</td>
<td></td>
<td></td>
<td>carbon</td>
</tr>
<tr>
<td>MS. Or.Oct 351</td>
<td>&lt;Egypt&gt;, 1435</td>
<td></td>
<td></td>
<td>carbon</td>
</tr>
<tr>
<td>MS. Or.Fol 583</td>
<td>&lt;Italy&gt;, 1288</td>
<td></td>
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<td>iron-gall</td>
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<tr>
<td>MS. Or.Fol 585</td>
<td>Fosset (Spain), 1365</td>
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<td>iron-gall</td>
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<tr>
<td>MS. Or.Qu 835</td>
<td>&lt;Provence&gt;, 1385</td>
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<td>MS. Or.Qu 831</td>
<td>Vidiuna (Italy), 1460</td>
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<td>iron-gall</td>
</tr>
</tbody>
</table>
Chapter 4: Quiring

The change in the mode of book production evident in the transition from the scroll to the codex form was a technological revolution with far-reaching cultural implications. The revolution lay in a shift from attaching consecutive units of writing material with text inscribed on one side only (by gluing together or stitching papyrus or parchment sheets), resulting in a clumsy rolled up scroll, to tying and binding together papyrus (only in the earlier period) or parchment, and eventually paper bifolia, written on both sides, in a manner that held together and preserved the book without fear of its bifolia separating, and which allowed the reader to comfortably leaf through it. To achieve this drastic change in the book form, and ensure that a book could be easily perused opening by opening (the two pages that are visible to the reader upon opening a book in the codex form), while also ensuring its physical integrity, required that it be constructed from quires¹ (English – quire, gathering; French – cahier; Italian – fascicolo; German – lage). It is impossible to produce a codex shaped book comprising many folios that opens easily for comfortable consecutive reading or navigating without a backbone of quires.² The quire is the material production unit of the codex. The quire’s building block is the bifolium³: a square piece of writing

¹ On the etymology of the term quire (קונטרס), see below in the appendix to this chapter. Mordecai Akiva Friedman has brought to my attention sources from the Geonic literature in which the Arabic term Dir is used to denote a quire. In my opinion, this word is not a codicological, but rather a bibliographical term. According to its usage, it denotes a collection of several textual units in the form of a quire, but not a quire of a book. It referred, apparently to an accumulated gathering of folios containing the texts of responsa.

² This is also true of the production of a printed book. Until around the mid-twentieth century, quires were stitched before binding. However, when the production of cheap paperback books began, the paper quires’ folded edges were cut and the separate folios were pasted in the back to the binding, so as to reduce the production costs by saving the stitching of the quires. As a result, the quire infrastructure became invisible.

³ A bifolium is to be distinguished from a sheet: a sheet is the unprocessed writing material in its original size before it is cut into the bifolia from which the quires are constructed. Only in folio size books (see below) do the sheet and bifolium sizes overlap. Gumbrt (Words for Codices, p. 1) proposed that the English word sheet be adopted to describe the raw material, according to the former and current use of the word. The codicological meaning of the Hebrew term we use for bifolium - עלים - is different today from its meaning in medieval times and until the recent era, when it meant the margins of a manuscript or book. Shemu’el ben Shemu’el who completed the copying of a commentary on the legends of the Talmud in Provence, circa 1423 (according to the other manuscripts he wrote), wrote it on 56 folios (i.e. 28 bifolia), testifying in the colophon: אני שמייאל בוניא קבלתי מיד יוסף כהן טגניס בעד כתיבת כ”ח עליים שכתבתי בזה הספר (MS Munich, BSB Cod. Hebr. 94). This indicates that he called the folios ‘leaves’, a term that was used after the end of the Middle Ages usually to denote a folio (and is simply a translation of the Latin term). The term עלים in the sense of bifolia appears also in a colophon from 1529, which was written in an Ashkenazic script under the influence of Byzantine-Sefardic scripts, presumably in Byzantium: טו קונטרסים הם, כל אחד מד’ עליים (MS Cambridge Add. 505,
material folded in two to create two folios (English - bifolium [pl. bifolia]; French - bifeuillet, and until recently especially diplôme; Italian – bifoglio or bifolio; German – bogen). Every quire is composed of several bifolia made of parchment or paper. The bifolia, whose width was greater than their height, were stacked one above the other and folded in the middle in parallel to their height, thus creating two attached folios (four pages) from each bifolium. A folio is therefore not a self-standing codicological unit, and in most cases, it would disappear unless it was attached to another folio. When a copyist was obliged for whatever reason (a serious scribal error, damage to the folio, etc.) to cut a folio, he would cut it in such a way that a strip of its inner margin (stub) was left so that its paired folio would still remain stitched into the quire and not detach and slip out. There can however be found in codices from the tenth century onward quires that are comprised of artificial bifolia constructed of two individual folios attached by their edges. This phenomenon of pairing individual leaves occurs only in parchment manuscripts, where, due to the costliness of the
materials, leftover sheets that did not amount to the size of a bifolium were nevertheless utilized.\textsuperscript{8}

**Illustrations of quires**

From Glatzer, ‘Aleppo’

Figure 10: A quire composed of four complete bifolia
Figure 9: A bifolium

Figure 12: A quire incorporating a folio and its stub
Figure 11: A folio and its stub

Figure 14: A typical quire of the Aleppo Codex made of five bifolia, in which the third bifolia is comprised of two folios and their stubs
Figure 15: Cross section of the quire from figure 14 (the third bifolium is highlighted)

\textsuperscript{8} On the quiring of artificial bifoliia, defined in European languages as in plano, and unjustly called in French ‘atlas’, and in Italian ‘atlante’, see Muzerelle, Vocabulaire codicologique, section 312.7. Among the Hebrew manuscripts, the rare practice of constructing quires of artificial bifolia created by pasting the stubs of two folios made of entire parchment sheets to produce hugely oversize books is known only from the splendid MS Berlin Ms. Or. Fol. 1210–11. The dimensions of its 1068 leaves (in two volumes) are 629X470 millimetres, and all (except for one folio) are comprised of sheet-leaves (?) that were pasted together to create bifolia. The manuscript – the largest of all the Hebrew manuscripts documented in SfarData – was produced with complex Masora ornamentations in 1343, apparently in the region of Erfurt in Germany. On this manuscript, see Kitwe-Jad – Jüdische Handschriften: Restaurieren Bewahren, Präsentieren [Ausstellung und Katalog P. Werner] (Ausstellungskataloge n.F. 47 a–b), Berlin 2002, vol. 1: Jüdische Kultur im Spiegel der Berliner Sammlung, pp. 18–22, and see also the second volume (ibid., vol. 2: J. Bispinck, Erste Schritte der Restaurierung der Hebäischen Bibel ’Erfurt 1’) dedicated to its restoration. See also, especially, O. Hahn, T. Wolff, H.-O. Feistel, I. Rabin & M. Beit-Arié, ‘The Erfurt Hebrew Giant Bible and the Experimental XRF Analysis of Ink and Plummet Composition’, Gazette du livre médiéval, 51 (2008), pp. 16–29.
The bifolium is the smallest codicological unit, the ‘atom’ of the codex, as it were, while the quire can be likened to molecular unit of the codex. The bifolia were cut from sheets of parchment which were produced from entire skins of calves, sheep, or goats, or from sheets of paper that were made in moulds. Evidence derived from the appearance of parchment bifolia in a small number of Latin manuscripts from the eleventh century onward shows that their quires were constructed by folding the parchment sheet several times according to the required size of the manuscript. So far we have not noticed clear evidences in Hebrew manuscripts for constructing quires by folding parchment sheets and later cutting the edges of the quire, but it should be admitted that no systematic observation of this facet has been carried out in Hebrew codicology. Clearly, both parchment and paper sheets were folded and cut into bifolia according to the required size of the book that was being produced, but it seems that most of the Hebrew codices imply that quires were composed by stacking bifolia from a pile of already-cut bifolia, picked up at random and not by folding a sheet to create one quire out of it. We will see below that the sheer odd quire structure of most of

9 See L. Gilissen, ‘La composition des cahiers, le pliage du parchemin et l’imposition’, Scriptorium, 26 (1972), pp. 3–33; idem, Problèmes à la codicologie: Recherches sur la construction des cahiers et la mise en page des Manuscrits médiévaux, Gand 1977, pp. 13–122. Further bibliography is included in Maniaci, Archeologia, pp. 223-224. Among later works, an article by Gumbert (‘Sizes and Formats’, in: Maniaci & Munafò (eds.), Book Materials and Techniques, 1, pp. 230-231) should be mentioned: in it Gumbert demonstrates how the method of folding the sheet may be reconstructed according to the place where the flanks emerge visibly at the margins of the parchment folios, and also how the orientation of the traces of the animal’s spine which are visible in the parchment leaves attest to the format, i.e. to the number of folds of the sheet that determine the size of the book. In the folio format, the spine trace is visible in the middle of the bifolium; in the quarto format it is visible in the middle of the sheet’s fold and parallel to it, and in the octavo format, it should be visible in the upper edge of the leaf, if the mark was preserved after the cutting of the upper margins. See further, J.P. Gumbert, ‘Skins, Sheets and Quires’, in New Directions in Later Medieval Manuscript Studies — Essays from the 1998 Harvard Conference, ed. D.N.M. Pearsall, Woodbridge–Rochester 2000, pp. 81–90. On the potential promise of measuring the thickness of parchment bifolia in order to reveal the manner of folding see Bianchi et al., ‘Facteur de variation de l’épaisseur du parchemin italien du VIIIe au XVe siècle’, in: Maniaci & Munafò (eds.), Book Materials and Techniques, 1, p. 154. On the manner of folding sheets, see the figures accompanying the folding terms in Muzerelle, Vocabulaire codicologique, section 312.02; Gumbert, Words for Codices, section 313.3.

10 The quinion composition was the standard composition in the Middle East (in all Semitic manuscripts) and in Italy in all the dated manuscripts, which comprise around a third of all the dated Hebrew manuscripts. Nor are the several sizes of senion composition, which was the secondary composition used in Hebrew manuscripts in zones of Sefardic book culture (and was common among Latin parchment manuscripts in the 13th and 14th centuries, see below n. 48) consistent with the assumption that quires were created by folding the sheet. Collette Sirat proposes that the odd (quinion – five folios) composition of the early non-Hebrew codex quires written in the Orient were suitable for papyrus, which was rolled into a scroll after its manufacture, and then cut into any number of sheets,
the dated Hebrew codicological units – unlike the standard quaternion quiring of Western Latin manuscripts before the ninth century – affirm the supposition that quires in Hebrew manuscripts were not created by folding the sheets but by randomly collating and stacking bifolia that were cut from different sheets. This practice is attested in an eleventh century halakhic source in Ashkenaz that states that the copyist himself arranged the quires. Hebrew manuscripts from the fifteenth century have not until today yielded evidence that the quires were formed by folding, unlike Latin manuscripts of the same period in which many evidences for composition of the quires by folding have been found, even more than from earlier periods. What’s more, these evidences demonstrate that the quire was a copying unit, because it was written on a spread out sheet prior to being cut into separate bifolia. Yet, it should be emphasised that only in a few dozen Latin manuscripts has evidence been found of quires produced by folding the sheet, and that in the vast majority of non-Hebrew manuscripts, whether Oriental or Latin, the quires were not created by folding.

After the text was written, quires were sewn at the folds with a variety of techniques and with different dispositions of the stitches (according to region and chronology), and sometimes the original stitches or replacement stitches (medieval manuscripts were rebound several times) or only the temporary stitches were preserved, and are still visible at the back of the quire and in its central openings. The sewing of the quires was completed by tying them together and binding the entire volume of quires with a variety of methods. Here we should mention Michael Gullick’s discovery of (literary

while parchment quires which were created by folding the sheet required that the number of folios be a power of two. See C. Sirat, ‘Pour quelle raison trouve-t-on au Moyen Âge des quinions et des quaternions? – Une tentative d’explication’ in: Hoffman (ed), Codicologie comparée, pp. 131-135. 11) לכתב אגרת אם אדם צורך בהיתר בחולו של מועד, אבל לתקן קונטריסין מן הקלפים לכתוב אחר המועד – אסור (Ma’se haGeonim, eds. A. Epstein and J. Freimann, Berlin 1909), p. 33 and references cited there [in Hebrew]). Regarding the identification of the transmitter of this halakha, see. A. Grossman, ‘Bnei Makhir ve-sifram “Ma’ase haMakhiri”’ Tarbiz, 46 (1985/6) (in Hebrew). (personal communication Simha Emmanuel).

12) These quires were revealed by the discovery of narrow attaching strips of parchment that remained after the cutting of the folios, showing the connections between the separate bifolia. The literature describing this phenomenon abounds. See Bischoff, Latin Palaeography, p. 21; Gumbert, ‘Skins, Sheets and Quires’ (above, n. 9). Gumbert presents evidence showing that quaternion quires in many Latin manuscripts were not created by folding of sheets, and concludes that until the 9th century at least, this technique of preparing quires was not in practice, and that it was rare in Oriental and Greek manuscripts. He also explains how the very existence of bridges connecting the folios is not proof of making quires by folding, and also discusses the phenomenon of temporary stitching. Peter Gumbert noticed the upper connection that survived between two folios in a fragment of a Latin manuscript, while examining the Latin manuscripts in the The Jewish National and University Library in 1991(currently the National Library of Israel) (MS Jerusalem Ms. Var. 475).

13) Original stitchings or bindings of Hebrew manuscripts are very rare and antique renewed bindings are also rare. Cf, below in the current chapter under the section heading ‘Binding’.
and material) evidence in Latin manuscripts that show that in the twelfth century, at least in England and in France, copyists wrote in quires whose bifolia had been stitched temporarily. One must also consider the implications of such evidence for the methods of pricking and ruling the quires using methods for simultaneously ruling entire quires, consecutive bifolia, or adjacent folios.\textsuperscript{14}

Stitching cuts – temporary stitches in the quires of MS Oxford MS. Heb d. 11

\textsuperscript{14} See M. Gullick, ‘From Scribe to Binder: Quire Tackets in Twelfth Century European Manuscripts’, in Roger Powell, the Complete Binder: Liber amicorum, ed. J.L. Sharpe (Bibliologia 14), Turnhout 1996, pp. 240–259. Gullick has already pointed out that Gregory had already assumed, in his historical article on the Greek quire from 1885, that quires were stitched temporarily (see below, n. 17). Gullick’s great discovery was in presenting literary evidences for temporary stitching while copying, and moreover, he also presented manuscripts displaying remains of temporary stitches (remains of parchment strips or threads, and only miniscule slits or horizontal cuts made by stitches without the threads). In addition, he noticed that the stations where the temporary stitches made holes were different from the holes for the regular stitches, and that they sometimes also re-served for the main stitching. Gullick uses the term ‘tacket’ for the temporary stitch. The Hebrew equivalent would be תך, used in the sense of a stitch in the context of sewing a scroll. See the baraita in the Palestinian Talmud, Megilla 2:5, 72b (according to MS Leiden): שלשה חוטי גידים, appearing in all the textual witnesses of the parallel baraita in the Babylonian Talmud, B. Megilla 19a, except for two witnesses – MS New York, Columbia X893 T 141 and MS Munich, BSB Cod. hebr. 140, where the text חוכי גידים appears (according to the Talmud Text Databank at the Saul Lieberman Institute of Talmud Research), a clear corruption of the word תך.

In the course of a seminar on the comparison of Hebrew and Latin manuscripts conducted by J.Peter Gumbert and myself, with the collaboration of the Bodleian Library at Oxford University in the Spring of 2009, Peter Gumbert noticed tacket cuts at the upper and lower edges of the centre folds of the preserved unbound (but re-stitched) quires in MS Oxford, Bodl. Heb. d.11, Sefer hazikhronot, compiled and copied by Elazar ben Asher Halevy of Germany (see above, chapter 1, n. 106). Moreover, in carefully examining all the folds of the central bifolia, Gumbert even found in two quires (no. 19 and no. 32) remains of the tackets themselves made of strips of parchments (see the plates in the article immediately following the reference to this note). In the Latin and Greek codices he noticed the remains of tackets in every quire of the codex. His conclusion was that this practice was very widespread in Latin manuscripts throughout Europe at least from 800 until the central Middle Ages, and he found its existence also in Ethiopian manuscripts until today, and in Arabic and Byzantine codices. In his opinion, the spread of the use of numbering of quire folios in Latin manuscripts in the fourteenth century rendered obsolete the practice of tacketing single quires in order to ensure the folios order. For, from the moment the numbering of quires became widespread in Latin codices, unlike in Hebrew codices, the numbering of each quire inall its bifolia was unscribed as it was eventually in print books as well (i.e A1, A2, A3, A4, or by marking the bifolium with numerals). He conjectured that the tacketing was also used for the ruling of the quire (especially when entire quires were ruled, or several bifolios were ruled at once) and for copying it, and that it was not only a temporary action prior to the final binding, but also sometimes a method for producing a codex made of separate unbound quires. In addition, it was an effective means to integrating single folios with their stubs in a quire. See J.P. Gumbert, ‘The Tacketed Quire: An Exercise in Comparative Codicology’, Scriptorium, 64 (2011), pp. 299–320 & pls. 50–54.
Ordering of the parchment bifolia

When a codex’s quires are made of parchments with distinguishable sides, the quires are ordered methodically and consistently in terms of matching the parchment bifolia sides and the book’s openings.\textsuperscript{15} Even when only the external and central bifolia of the quires are made of parchment, as we shall see below, this methodical and consistent ordering of the sides is kept in the transitional openings between one quire to the next. The most conspicuous difference in the texture, or at least in the colour of the parchment sides, has led to the wide acceptance of the practice, in all civilisations of the codex, from the tenth century at least, to arrange the bifolia prior to folding by matching their sides – hair side facing hair side and flesh side facing flesh side. Therefore we find that the two pages presented in each book opening, each of which belongs to a different bifolium (except for the central opening of each quire) are identical in appearance – either hair or flesh sides, in alternating order.\textsuperscript{16} It is therefore easy to notice when folios are missing from a codex, for if the matching of the sides is disturbed, and an opening displays two different sides of the parchment facing each other, this allows us to surmise that a folio (or an odd number of bifolia) is missing. Astonishingly, this method, which, as noted, has been in practice from at least the tenth century in all zones and in every type of book craft, was only observed in the nineteenth century. “Gregory’s rule” was the name given to this practice after the scholar of Greek manuscripts who publicized it.\textsuperscript{17} The guiding principle behind this symmetrical arrangement seems to have been aesthetic. However, Henk de Groot, a parchment maker in Rotterdam, who is engaged in studying the history of parchment making, claims convincingly (in an email sent to me on 9 July 2015) that the bifolia pages were arranged in corresponding sides due to the concavity of the hair sides and the convexity of the flesh sides (see above, chapter 3, note 44). Ordering the folios in opposite curving (concavity facing concavity and convexity facing convexity)

\textsuperscript{15} It seems that other considerations were at work, besides the aesthetic values and symmetry. On the greater thickness (according to precise measurements) of the outer folios in Latin manuscripts, see F.M. Bischoff, ‘Observations sur l’emploi de différentes qualités de parchemin dans les Manuscrits médiévaux’ in: Maniaci & Munafò (eds.), Book Materials and Techniques, vol. 1 pp. 82-85. Cf. Ibid. for an explanation of the fact that the holes (caused by wounds to the skin, and common in parchment folios, especially non-decorative ones) are found in the inner, thinner folios.

\textsuperscript{16} On the beginnings of the practice in Latin manuscripts on the British Isles (known there already from the second half of the sixth century) and later on the European continent (in scriptoria under Insular influences), see Vezin, ‘Réalisation matérielle’, pp. 26-27.

neutralizes the curviness and was essential for the production of a codex as a block both while being closed and being open and leafed. Therefore, the aesthetic aspect is the outcome of the codicological requirement. To quote Henk de Groo’s ground-breaking claim:

I think the manuscript makers choose the parchments leaves in opposite bowing: ( ) to neutralize the bowing of the leaves together. The result: a flat manuscript block. The equal colour of the openings was a lucky gift of beauty.

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It has been argued that the regularity is an outcome of the very construction of the quire by folding of the parchment sheet. The small number of early Latin codices providing evidence of quires that were constructed by folding, on one hand, and the odd quire structure of the quires’ bifolia in a few of the earliest Greek and Latin codices, on the other, argue against this view. The order of the bifolia in the quire is usually represented according to the initials of the sides’ types, and is marked upon each first recto of the first half of the quire, e.g. HFHFH18 (i.e a quire made of five bifolia beginning with the hair side, with the openings alternately matching). It appears that Gregory’s rule, which pertains in all of the quires of dated Hebrew codices, was not observed in some of the early undated manuscripts, although they too display a regular arrangement. In Geniza fragments and even in a few complete codices, all apparently from the region of Iraq, it was found that the spread out bifolia were arranged with the hair (or flesh) placed regularly in a uniform direction; in other words, after folding, the sides did not match at each opening (except for the centre opening), but rather a flesh side folio faced a hair side folio.19 The suggestion that this practice was typical of Babylonian manuscripts is undermined by the data on this method of arrangement in early Oriental and Occidental manuscripts written in other scripts - Latin, Syriac, and Arabic.20 If so, it seems that the method of arranging

18 In Hebrew, it is designated בּהשֶׁב.<ref>
19 I.e. according to the order HHHHH (in quinion quires, as practiced in the Orient), as in the early manuscript of the Sifra in Babylonian vocalisation, MS Vatican Vat. ebr. 66. For many more examples, see Beit-Arié, Hebrew Codicology, p. 41, n. 66, and esp. the article by Mordecai Glatzer, “Early Babylonian Hebrew Manuscripts”, Gazette du livre médiéval, 27 (1995), pp. 19–24.
20 The methodical arrangement without matching sides is also known from Insular Latin manuscripts (produced on the British Isles), many from the second half of the sixth century until around 700 (and eventually from the ninth through the eleventh centuries), and from manuscripts produced in Continental scriptoria, especially under the influence of Insular manuscripts, see Vezin, “Réalisation
bifolia without regard for matching the sides was not characteristic of a region but rather of a period, and it may be the case that all the early codices in all scripts were at first arranged according to this method – in imitation of the papyrus codex – and that at some point (which might have been different for each region or script) the bifolia came to be arranged with matching sides. It may be that Babylonian copyists continued to practice the old method even after other Jewish copyists had adopted the new one.

Illustrations of a quire arranged with matching parchment sides (uniform appearance in each opening) and of a quire arranged without matching parchment sides
From: Glatzer, ‘Aleppo’, p. 197

matérielle’, pp. 26-27. Julian Brown, the scholar of early Insular manuscripts (whose quinion quires attest to Oriental influence) has expressed his opinion that these show the influence of the quires used in papyrus codices. The sheets of papyrus that were cut into bifolia were made from strips from the stem of the papyrus plant, and were manufactured in two layers so that the strips of one layer were perpendicular to the fibres visible on the other side. When stacking bifolia that had been cut from papyrus sheets they were arranged in the quire so that in each of the codex’s openings one side displayed horizontal strips of fibre and the opposite side displayed vertical strips. Brown believes that quiring of non-matching sides in Insular manuscripts was influenced by the early Continental and Oriental manuscripts. When parchment first came to be used, scribes who were not yet accustomed to folding the sheets in matching openings were likely to compose parchment quires as if they were papyri, see J. Brown, ‘The Oldest Irish Manuscripts and their Late Antique Background’, in Ireland and Europe: The Early Church, ed. P.N. Chanthán & M. Richter, Stuttgart 1984, pp. 324–325 [collected in Brown, A Palaeographer’s View, p. 238]. According to Sebastian Brock, Gregory’s Law was not obeyed in early Syriac manuscripts produced either in the eastern part or western regions of the Middle East. His view is presented in an unpublished article, which I thank him for allowing me to read, P.S. Brock, ‘Saba, the Scribe “who never made a blotted tau” – Some Codicological Notes on Three Syriac Manuscripts from Redsh’aim, c. A.D. 724–726’. The arrangement of the folios without matching sides in the form of HHHHHH (as in those same Hebrew manuscripts) was the standard arrangement in manuscripts produced in the scriptoria of the Syriac monasteries both in the Eastern Church, knows as the Nestorian Church, and in the Western Church, known as the Jacobin or Syriac Orthodox Church, see F. Briquel-Chatonnet, ‘Cahiers et signatures dans les manuscrits syriaques – Remarques sur les manuscrits de la Bibliothèque National de France, in: Hoffmann (ed), Codicologie comparée, pp. 158-159. Moreover, in a large sample of fragmented Arab manuscripts of the Qur’an from the end of the seventh through the middle of the tenth centuries it appears that most of the bifolia were arranged with non-matching sides (HHHHH). See Déroche, Islamic Codicology, pp. 71-76. Déroche proposes that this practice should be understood as an imitation of the papyrus codex (ibid. pp. 83-84), as Brown had already proposed before him (above).
The beginning of the quire

In most Hebrew manuscripts, the quire began with the hair side: i.e. the external surface of the outer bifolia, which enfolds the quire, were hair sides. In Italy (and rarely in Spain and Byzantium), an opposite tradition was practiced – each quire began with flesh side, i.e. the quire was ordered according to the scheme FHFHF, according to the number of bifolia. This method of composing quires was common only in Italy, and it is evidenced in half of the Italian manuscripts written on parchment. It is first attested in the 1280s, and in the fourteenth century it gradually spread and is observed in 30 percent of all the parchment manuscripts written at that time: during the first half of the century it appears in only ten percent of manuscripts, and in the last quarter of the century – in half. In the fifteenth century almost sixty percent of Italian parchment manuscripts begin with the flesh side, and in the first decades of the sixteenth century – two thirds of them do. The fact that so many of these manuscripts, deriving from the turn of the fourteenth century to the end of fifteenth century were written by immigrant scribes – mostly Sefardic and partly Ashenazic scribes, who were not accustomed to arranging the quires in this manner – in addition to the fact that the broad spread of the custom overlaps, since the 1420s,

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21 The earliest manuscript with quires beginning with the flesh side is from 1280 (MS Parma Parm. 2052, De-Rossi Catalogue 667, Richler & Beit-Arié Catalogue [Parma] 188). This and other chronological datum should not be accorded too much weight, without taking into account the size of the corpus in this particular time period. One must not forget that the number of extant dated Italian manuscripts prior to 1280 is very small: two manuscripts from the 11th century, two from the 12th century, and eleven from the years 1246-1279. It should be noted that all of the first nine dated manuscripts displaying this arrangement before 1313 have quires whose composition diverges from the standard composition (six or four bifolia instead of five).

22 It is interesting that all the parchment manuscripts surviving from the second and third quarter of the fourteenth century (after 1325 and before 1371/2) – 28 in number – were arranged beginning with the hair side.
with the spread of ruling with coloured ink in Italy,\textsuperscript{23} raises the question of whether the rapid spread of this method of ordering the quire (which was already in use in the thirteenth century) in the later period is related to the commercial production and wholesale distribution by stationers of ruled quires during the Renaissance. For it can be assumed that the immigrant scribes purchased or were given readymade quires that had been composed and ruled according to a method to which they were unaccustomed, and it is the local typical method of quiring and ruling that is reflected in the manuscripts they copied.\textsuperscript{24} In any case, the quiring method beginning with the flesh side was one of the characteristic traits of the Latin Humanist manuscripts of the fifteenth century, and it appears in almost all Latin manuscripts that have been inspected.\textsuperscript{25}

In addition to the widespread practice of beginning quires on the flesh side in Italy, this practice can be found in around one dozen manuscripts from Spain, comprising around 6 percent of Spanish parchment manuscripts, the earliest of which is from 1300,\textsuperscript{26} and in greater proportion (albeit, in a negligible number of manuscripts) in Byzantium, and for the first time in a period paralleling the first appearance in Spain. It is curious that the ‘Italian’ custom was not widespread in Byzantium, because after the ninth century it became the standard custom of Greek copyists in Byzantium.\textsuperscript{27}

This discussion should exclude the small number of Ashkenazic manuscripts written on parchment, in part of which it is possible to distinguish between the parchment sides, and in part of which it is not possible to distinguish between the sides, or only possible with difficulty. No real importance should be attached to fact that in some quires it appears as though it is possible to discern a matching side arrangement, beginning with the flesh side, for it is clear that manuscripts were written on

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\textsuperscript{23} Some two thirds of the ink-ruled Hebrew manuscripts from Italy begin on the flesh side.
\textsuperscript{24} See below in chapter 6, section b: Ruling, subsection 3c: Ruling in ink.
\textsuperscript{25} See Derolez, Codicologie, vol. 1, p. 33. Derolez found this method used in 98.7% of 1,200 Humanist manuscripts he inspected and documented.
\textsuperscript{26} MS Paris Hébreu 20, a Bible written in Tudela (Spain) by Yehoshua ben Avraham Ibn Gaon, who copied the Masora and probably also the biblical text (See Manuscrits médiévaux I, 25).
\textsuperscript{27} As Gregory had already noted (above, n. 17). See also Irigoin, ‘Centres de copie byzantins’ (1958), p. 20. For additional information on beginning with the flesh side not only in Greek manuscripts but also in Latin ones, and on the revival of the custom in the 13th century, see Vezin, ‘Réalisation matérielle’, pp. 26-27. Indeed, most of the dated and localised Latin manuscripts from France which I inspected in Parisian libraries (see above, chapter 3, n. 49) from the end of the 13th century to the end of the 14th century have quires beginning with the flesh side. See the summary by Agati, Introduzione all codicologia, p. 154. For early Latin codices whose quires begin with the flesh side, see Lowe, CLA, vol. 1, p. X. Coptic manuscripts begin with the flesh side in the manner of Greek manuscripts (from the 9th century forward).
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parchment which the manufacturers were attempting to give an equalised appearance (see above, chapter 3, section 1: Ashkenazic parchment).

‘Gregory’s Rule regarding the arrangement of quires with matching sides was valid also in mixed quires. It goes without saying that the rule does not pertain to the quire itself, but to the transition from quire to quire (the pages of the central bifolium will always present an opening of uniform appearance). Had the outer parchment bifolia of mixed quires not been arranged systematically with matching sides, the openings occurring between quires would not match. Indeed, we find that mixed quires always begin with the same side. In all zones and also in Italy, where beginning the quire with the flesh side was so common, the mixed quires usually begin with the hair side, and therefore the last folio of the quire and the first folio of the subsequent quire both present the hair side. In only a few manuscripts with mixed quires do the quires begin with the flesh side. As for quires in which the centre bifolium is also made of parchment – more than two thirds of them present the hair side in the quire’s centre opening, but the rest present the flesh side. In all zones, therefore, there was a clear preference for placing the spread out sheets of paper between parchment bifolia whose outer surfaces were hair sides, i.e. to the aesthetic principle of matching sides in the interface of two quires, a principle of symmetry was implemented in placing of the inner parchment bifolium.

**Quire composition practices**

The number of bifolia per quire in medieval parchment manuscripts was not great, and because of the thickness of the parchment it was never greater than six (twelve folios)\(^{28}\) to ensure the book could be opened easily. However, in paper quires or mixed quires the number of bifolia could be as high fourteen (twenty-eight folios),\(^ {29}\) although typically not exceeding ten.\(^ {30}\)

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\(^{28}\) An unusual example of a parchment codex with eight bifolia quires is MS Cambridge Add. 1564 (8), written in France in 1242-1243. However, this manuscript was written on especially thin parchment, unlike the practice in Ashkenaz, and it seems this was the reason its quires were composed as a multiple of the four bifolia that were commonly used there.

\(^{29}\) Among the dated manuscripts, only two manuscripts with this rare composition have been found, both of paper, and they were written in Italy by immigrant copyists. The first manuscript was written by a Provençal scribe, probably in southern Italy, in 1428 (See *Manuscrits médiévaux*, I, 68 ; and see *ibid. n. 1* in regard to identification of its provenance), and the second was written in an Ashkenazic script in 1446 (see *ibid. I, 122*).

\(^{30}\) In the early period of the Greek and Coptic papyrus codex, the quires were composed of a very large number of bifolia. Irigoin presents an example of a Greek codex containing 52 bifolia (104 folios), see J. Irigoin, ‘Les cahiers des manuscrits grecs’, in: Hoffman (ed), *Codicologie comparée*, p. 2. The Gnostic Coptic texts from Nag Hammadi are composed of one quire with multiple bifolia, see J.M.
Most of the Hebrew codices are characterised by inner uniformity: most of the quires in the same manuscript usually had a uniform number of bifolia. Clearly, quires at the end of a manuscript or of a work (when the unit of production was a textual unit) might deviate from the uniform composition of that manuscript, and might include more or fewer bifolia depending on the length of text remaining to be copied. In most manuscripts produced in each of the geo-cultural zones of Hebrew book craft, quires were composed of an equal number of bifolia that were folded and sewn at the folding. Even when several different quire compositions, or a competing composition to the standard one, were in use in a certain area, it appears that the choice of composition did not deviate from the selection available in that particular region. In the regions on the Middle East, where the transition to paper was both early and rapid, and mixed quires were not in use, there was no meaningful difference between the composition of quires in parchment versus paper manuscripts. The tendency to implement parchment quiring also in paper manuscripts is evident in Germany, where the transition to paper was late and slow, and where mixed quires were likewise not in use. In other regions, the quiring of paper is less regular than the quiring of parchment, and often it is not uniform at all, and needless to say the quiring of mixed quires is frequently different from both parchment and paper quiring.

Unlike other codicological traits, data on the quiring of non-Hebrew manuscripts, especially Latin one, are numerous (although not exhaustive), and allow a comparative discussion.31

The database of Hebrew codicology is based on a corpus of all the extant and accessible dated manuscripts. It therefore also includes many fragmented manuscripts (especially from the Orient), in which the composition of the quires is unclear, and also manuscripts in which the composition of the quires is non-uniform, and these might somewhat distort the data about the composition of quires that may be elicited from the complete corpus. To minimize such distortions, most of the data presented

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Robinson, ‘Codicological Analysis of Nag Hammadi Codices V and VI and Papyrus Berlinensis 8502’, in Nag Hammadi Codices V,2-5 and VI with Papyrus Berlinensis 8502, 1 and 4, ed. D.M. Parrott (Nag Hammadi Studies 11), Leiden 1979, p. 13. One example of a Hebrew quire made of multiple bifolia, also from papyrus, exists, but its date is later, and it is consistent with the late adoption of the codex – a fragment of a codex of piyyutim, almost certainly from the 8th century, made of one quire containing 24 bifolia (48 folios) at least. See Sirat, Papyrus, pp. 69-82 and Plate XVIII.

31 Paula Busonero conducted an especially comprehensive survey, for which she examined (based on catalogues) 3,410 codicological units from European countries (including England) – 386 from the 12th century, 387 from the 13th century, 620 from the 14th century, 1,767 from the 15th century. For the details of the survey and its findings, see Busonero, ‘Fascicolazione’.
below are based on a corpus that only includes non-fragmented dated manuscripts before 1500, whose quire composition is clear and largely uniform. In the detailing of the compositions of quires and the summary of quiring practices by region, presented below, the source of the data or of the details is only noted explicitly when they pertain to manuscripts outside this corpus.

Three bifolia (6 folios, 12 pages) - ternion

Ternions are very rare, and the reason for devoting a separate paragraph to them is that most likely this quiring practice represents the sole local (rather than regional) tradition identified to date in Hebrew book production. Quires made of three bifolia – the smallest of all composition types – in fact appear before the mid-fifteenth only in Spanish manuscripts.32 Six manuscripts discovered to date with this type of quires, all Bibles, were written between the end of the twelfth century and 1300 and were produced in Toledo – four localised explicitly in the colophon, one localised by its decorations and based on its attribution in a sixteenth century court sales deed to a scribe belonging to a scribal family that was active in Toledo, and yet another based on the blessing formula ישע יקרב, which accompanies the date in the Toledo colophons.33 It is possible to surmise, therefore that ternion quires were a local tradition of the Toledo school until around 1300, although this tradition did not displace the pan-Spanish custom of quaternions. One can presume that this unique tradition derived from a local Arab tradition of production that had crystallized when

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32 If we justifiably ignore this composition in the mahzor according to Ashkenazic rite written in Germany in 1322, MS Parma Parm. 3267–3268 [in Beit-Arié, Hebrew Codicology, p. 43 mistakenly documented as 5267-5268] (De-Rossi Catalogue 442). All of this manuscript’s quires, in both volumes, were not composed of bifolia but of folios and stubs pieced together from parchment fragments – each pair of folios attached by their stubs created an artificial bifolium. The construction of entire quires from folios and their stubs is unusual. Usually a quire included no more than one bifolium constructed of paired separate folios with the aid of their stubs, as in the ancient Aleppo Codex (above, n. 7). A construction like the one in MS Parma would have presumably caused a thickening of the book’s foldings and therefore the scribe reduced the number of artificial bifolia in a quire. Another manuscript from outside of Spain which includes ternion quires was produced in Rome in 1323 – MS Parma Parm. 3099, 3119, 3126 (De-Rossi Catalogue 692-694), but in this manuscript the unusual quiring is secondary, appearing in only one third of its quires, while the rest display a composition that is typical for Italy in all periods (quinions).

33 For the details of the manuscript, see Beit-Arié, Hebrew Codicology, p. 43, n. 71-72. Besides these manuscripts, there are three more uncolophonied manuscripts: MS Oxford MS. Poc. 281 (Neubauer Catalogue 104, Cf. Neubauer & Beit-Arié Catalogue for the same entry, where the identification is proposed); MS St. Petersburg Eap. II B 53; MS Cape Town, South African Library, Grey collection 6B1.
Toledo was under Muslim rule, as indicated by the similar composition of quires that was common to many Arabic manuscripts from the Western Muslim regions.\textsuperscript{34}

**Four bifolia (8 folios, 16 pages) - quaternion**

Quaternions were the standard composition in early Latin manuscripts before the ninth century, with the exception of a few very early manuscripts which had a quinion composition, like the composition of manuscripts written in the Orient and those written on the British Isles.\textsuperscript{35}

This composition was common in several zones of the Hebrew parchment codex, but was much less common in paper codices, which allows the quiring of a greater number of bifolia, and is only found in a few manuscripts with mixed quires that were all (with one exception) produced in Byzantium.\textsuperscript{36}

Apart from a few manuscripts with unusual compositions, this is the standard composition in Franco-German (Ashkenazic) parchment manuscripts, from northern France and the German lands. It is used in almost all the Ashkenazi parchment manuscripts in the abovementioned dated corpus, from the very earliest ones which were written in the final quarter of the twelfth century (and even earlier than this date in undated manuscripts), without variation in the scope of its use over the centuries, and represents 93% percent of this corpus.\textsuperscript{36} The quaternion composition is attested in a rare contemporary literary witness from Germany, dating from the time of the earliest dated manuscripts from this region.


\textsuperscript{36} According to Busonero’s survey, this rate is identical to the rate of this composition in European Latin manuscripts (including England) in the second half of the 12\textsuperscript{th} century; see Busonero, ‘Fascicolazione’. The distribution of this composition in Latin codices over the centuries in various countries is unstable and smaller than that seen in Hebrew manuscripts. On the nearly exclusive method of quaternion quiring until the end of the monastic period of Latin manuscript production, see Ornato, Apologia, p. 34. Ornato proposes an explanation for the hegemony of the quaternion quire throughout Europe against the background of the use of the technique of ruling by hard point (see below), which during the Carolingian period was especially applied by simultaneously ruling four bifolia stacked one above the other. This composition therefore was suited to the ruling method.
and it is contained in the commentary to the piyyut, which is recited on Simhat Tora (the final day of the Festival of Sukkot) before the Tora reading, in a commentary to a prayer book written by Eleazar ben Yehuda of Worms the author of Roke’aḥ, one of the most prominent figures of Ashkenazic piety:

Asher because Avot

The extent to which this composition was entrenched in Ashkenazic book craft can be deduced from its prevalence in paper codices. In most zones, paper codices display non-uniformity and a great variety of compositions, but in Ashkenaz almost half of them are composed of quaternions, like the parchment quires, even though the thinness of the paper could have allowed them to include a larger number of bifolia.

The quaternion composition in parchment quires was also very common in Sefardic zones of codex culture, although less so than in Ashkenaz. Generally speaking, quaternions comprise some 80 percent of Sefardic parchment codices, without significant changes in the rates of distribution over time, while only four percent of the many Sefardic paper manuscripts display this composition.

The quaternion structure of quires is found in almost all of the few parchment manuscripts from Byzantium which have survived. This was also the common structure of quires in Greek manuscripts since the Byzantine Renaissance in the ninth century onward, and it appears already in a few early codices that have survived, such as the famous Codex Sinaiticus; however, it is not the most common structure among the various compositions found in Byzantine paper manuscripts. In the Middle

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38 Below, in table 17, it will be seen that 14% of all the Sefardic manuscripts are constructed from senions – a secondary custom that began to appear in the final quarter of the 13th century. Until then the quaternion composition was the only composition in use. See further below in the section discussing the senion composition and in the summary section on Sefardic quiring methods.

39 Those of them which are dated and whose quiring structure is clear do not amount to more than 25, and of these, three have a different composition.

East, with the exception of Iran and its neighbouring areas, quaternions were rare in both parchment and paper Hebrew manuscripts. However, the quaternion composition is common to most of the manuscripts – all but one of paper – produced in Iran and Uzbekistan (Bukhara and Samarkand), according to localised or localizable manuscripts or as can be deduced from other data indicating their provenance. In this region, the quinion composition according to Oriental practice is found in only a few manuscripts (at least two of which were written in Azerbaijan, the northwestern region of Iran bordering on Iraq). However, one should be careful in deducing this on the basis of the few Persian manuscripts in Hebrew scripts: from among a total of merely 29 dated codices, one without an explicitly inscribed dated, whose date is estimated on the basis of another dated manuscript in the hand of the same copyist, only 16 are non-fragmented and allow the composition of the quires to be ascertained. Of these, 13 display the quaternion structure (and of these two manuscripts are mixed with quinions), and only three of them share a structure according to the Oriental structure. This caveat is removed once we pay attention to the data on the quiring of Arabic and Persian manuscripts produced in Iran in the same epoch. These data are seemingly unambiguous – the common composition of quires in Iran is indeed the quaternion. 

While inspecting the collections of the Bodleian Library, this was the composition I found in all the explicitly dated and localised Persian and Arabic manuscripts. That this was the prevalent composition of Persian and Arabic manuscripts from Iran can be deduced from their descriptions in the catalogue of the collections in the Bibliothèque nationale de France, see: F. Richard, Catalogue des manuscrits persans, vol. 1: Ancien fonds, Bibliothèque nationale [de France], Département des manuscrits, Paris 1989. Quaternion quires are also found in ancient Qur’ans from Iran, according to their description in the catalogue of the exhibition of Qur’ans in the British Library; see M. Lings & Y. H. Safadi, The Qur’ān: Catalogue of an Exhibition of Qur’ān Manuscripts at the British Library, 3 April–15 August 1976, London 1976, p. 14. Déroche found that 70 percent of the Arabic paper manuscripts that he inspected in the Bibliothèque nationale de France were made of quinions, see Déroche, Islamic Codicology, p. 87 (on the vast majority of parchment manuscripts with quinion quires in the collection of that library and in the Damascus Geniza kept in Istanbul, cf. ibid., pp. 74–75). As opposed to them most of the Persian manuscripts from the 13th century, (and even prior to that) and until the 16th century have quaternion compositions (see ibid. p. 93). Déroche & Richard, (‘Du parchemin au papier’, pp. 192-195) presented data indicating that the practice of quaternion quiring crystallized in Persian paper manuscripts only in the second half of the 13th century, and indeed, these data are consistent with the data from Hebrew manuscripts. It should be noted that the earliest Hebrew manuscript with quaternion quiring, which may have been written in the region of Iran, is from 1190 (MS Oxford MS. Poc. 96, 1190)
In Italy the quaternion structure is quite rare. It appears only from the last decade of the fourteenth century, especially in parchment manuscripts (from the end of the fourteenth century until 1500, 14% display this composition), however, most of the Italian manuscripts of this structure were produced by immigrants from France and Germany and especially from Provence and Spain, who usually settled in Northern Italy following the expulsion from France and the persecutions in Spain in 1391. The first four decades of the sixteenth century saw a steep increase in the ratio of dated paper manuscripts with this composition (27%). This change should be attributed to the spread of print and the standardisation of quiring in printed books, with the emergence of the technique of imposition.

**Five bifolia (10 folios, 20 pages) - quinion**

The Latin term *quinternus* for describing the quire composition made of five bifolia is the source of the Hebrew term קינטנוס, and it appears for the first time, apparently, in Rashi’s commentary on the Talmud (see below in the appendix to this chapter). And yet, the quinion was actually not in use in the Ashkenazic zone. It was the standard composition of the quire in the Middle East (except for Iran and its environs, as noted), regardless of the writing material, as well as in Italy in parchment codices, from the earliest extant dated manuscripts (the beginning of the tenth century in the Orient, the last quarter of the eleventh century in Italy) and until the end of the Middle Ages. From the Middle East (except for Yemen) only thirteen parchment manuscripts allow us to clearly discern a uniform quire structure, all of them biblical, and they were produced from the beginning of the tenth century until 1327 (most before 1029). Ten of them contain quinions and three contain quaternions (two of these were written by immigrant copyists from Spain and North Africa who employed their own quiring tradition; one was written by a scribe who several years later wrote on quinions). In Yemenite parchment manuscripts the quinion structure was the standard, but in two manuscripts we find quaternions. In the parchment manuscripts the ratio of quinions in the Orient is 81 percent (91 percent in Yemen). The ratio of the quinion

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Neubauer Catalogue 1225); the same copyist also wrote the undated MS Oxford MS. Hunt. 135 (Neubauer Catalogue 550), which also has quaternion quires. It may be the case the quaternion quiring appeared even earlier, as might be suggested by MS Jerusalem Heb. 8° 2238, written in 1106/7, apparently in Iran, and containing a decorated version of the Shelah-Lekha Tora portion. The first and last quires in the manuscript are quaternions and the middle two quires are quinions, see *Codices hebraicis*, Part III, ms. 50.
composition in Italian parchment quires in the said corpus is 84 percent. Were we to exclude from this corpus the parchment manuscripts written by immigrant scribes from France, Germany, Provence, and Spain (some of whom would have been likely to construct the quires according to their native traditions), the ratio would be 92 percent.

In Spain, and in Ashkenaz especially, the quinion structure was rarely used. In Spain it has been documented in six dated parchment manuscripts and in thirteen paper manuscripts and in a few others lacking colophons from the thirteenth century onwards. In the Franco-German lands this composition is not found among the dated manuscripts (with the exception of one from the fifteenth century) and has been observed in a few undated manuscripts from prior to the fourteenth century. One of the Ashkenazic manuscripts is an undated codex containing the Prophets and Hagiographa, without an indication of the copyist’s name, but its appearance attests to a very early date. The composition of most if its quires may indicate that the quinion form was used in Ashkenaz in an earlier period than that of the extant dated manuscripts, as attested by the term קונטרס (see appendix, below).

The quinion was the standard composition in Middle Eastern codices of all the Semitic scripts, and even in some of the early Greek and Latin manuscripts produced there in the first centuries of the Common Era. The earliest codices produced in the Orient in a Semitic script were written in Syriac, and apparently all Syriac codices had a quinion quire composition, in all the epochs from the very earliest dated manuscript from 411-412. Later the Arabic codex appeared on the scene, and Karabacek has

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43 As opposed to 29% in paper manuscripts.

44 Most Latin manuscripts written in Latin script in Seville during 1393-1500 have a quinion composition (around two thirds) and only a quarter of them have senion compositions. See, M.L. Pardo Rodriguez & E.E. Rodriguez Díaz, ‘La producción libraria en Sevilla durante el siglo XV: Artesanos y manuscritos’, in Scribi e colofoni (above, ch. 2, note 211), pp. 201–202, 216.


already emphasized the quinion structure of the quires in these codics.\textsuperscript{47} It appears that the form inspiring the production methods and design of the Hebrew codex in the Orient was the Christian Syriac codex, which presumably was also the model for the crystallization of the form of the Arabic Muslim codices.

\textbf{Six bifolia (12 folios, 24 pages) - senion}

Senions are not common in Hebrew parchment codices, but are notably employed in paper ones. However, this was the most common composition in Latin parchment codices in Western Europe from the thirteenth century onward, but its frequency in these codices was greatly reduced in the fifteenth century, when it actually became a very common composition in paper manuscripts.\textsuperscript{48} This is the most common composition in paper manuscripts produced in the zones of Sefardic book culture, and it appears in almost half of them (45 percent). Senions were a secondary composition to the quaternion composition in Sefardic parchment codices since 1275,\textsuperscript{49} yet they were used until 1500 in only 15\% of them. Senions were the main composition used in paper manuscripts from the Byzantine zone, and their ratio (48 percent) is slightly higher than that of the Sefardic zones. In Ashkenaz the composition appears in a few parchment manuscripts, but in more than one third of the relatively few paper manuscripts, and similarly in Italy – this composition is found only in a few parchment codices but in about a quarter of paper ones.\textsuperscript{50} Only in the Orient was this composition hardly ever used.

The senion composition was already the minimal structure suited for constructing mixed quires of parchment and paper (except for a few manuscripts constructed out of smaller quires). While this composition was not the most common in the


\textsuperscript{48} According to Paula Busonero’s survey its rates are as follows (percentages rounded to the closest integer): In 13\textsuperscript{th} century England – 51\%; in 13\textsuperscript{th} century France – 32\%, in the 14\textsuperscript{th} century – 47\%; in the 15\textsuperscript{th} century in parchment manuscripts – 9\%, and 61\% in paper manuscripts; in 13\textsuperscript{th} century Italy – 41\%, in the 14\textsuperscript{th} century 22\%, and only 3\% in the 15\textsuperscript{th} century, but 20\% in mixed quires; in 15\textsuperscript{th} century Germany a total of 72\% (21\% parchment, 86\% paper). See Busonero, ‘Fascicolazione’.

\textsuperscript{49} MS Vatican Ross. 601 written in Huesca. The earliest extant paper manuscript with this composition was written around the same time in 1282.

\textsuperscript{50} Seven of the ten earliest dated manuscripts in Italy (including the three earliest ones) whose quires begin with the flesh side between 1288 and 1325 (as well as several undated manuscripts that include the copyist’s name) have the senion composition – this fact, as well as the reasons for it, are of interest.
zones where mixed quires were used, as we shall see, it was fairly common in the Byzantine zone (22 percent)\textsuperscript{51} and somewhat in Italy and in Spain.

**Seven bifolia (14 folios, 28 pages)**
A very rare composition. In our corpus it is found in seventeen paper manuscripts, in thirteen manuscripts with mixed quires from Spain, Italy, and Byzantium, and in one Italian parchment manuscript.

**Eight bifolia (16 folios, 32 pages)**
The eight-bifolia quire was common in paper or mixed quires in Spain, Byzantium, and Italy in the fourteenth and fifteenth centuries. In Spain this structure was used in around a third of paper and mixed parchment and paper manuscripts, in Byzantium in 23 percent of paper manuscripts and in 39 percent of mixed manuscripts, and in Italy in a quarter of paper manuscripts and in around a third of mixed quire manuscripts. In all of these regions the eight-bifolia composition was not the most frequent one, and although it existed it fell behind the other structures in terms of frequency.

**Nine bifolia (18 folios, 36 pages)**
The nine-bifolia quire was an extremely rare composition and it appears only in paper- or mixed paper and parchment manuscripts produced in Spain and Italy. In Only fifteen dated manuscripts of this composition were found.

**Ten bifolia (20 folios, 40 pages)**
Forty-eight manuscripts composed of paper quires and mainly of mixed parchment and paper quires constructed from ten bifolia have been found in all zones except for the Orient and Yemen, especially in Spain and Italy, and in one manuscript written in a Sefardic script at the end of the 15\textsuperscript{th} century in Jerusalem.

\textsuperscript{51} This is the composition used in the earliest extant manuscripts made of mixed paper and parchment quires – a Byzantine manuscript produced in Alexandria in 1212 (see above, chapter 3, in the text referenced by n. 124 and in the note itself).
Eleven-fourteen bifolia (22-28 folios, 44-56 pages)
These compositions made of numerous bifolia were very rare among paper manuscripts and in manuscripts with mixed parchment and paper quires. All together, eighteen manuscripts with compositions of this kind have been found in Spain and Italy (and in one manuscript written in a Sefardic script in the Orient).

In all regions, therefore, the parchment codex was composed of quires constructed out of a generally uniform number of bifolia, especially quaternion (in Ashkenaz, Spain, and Byzantium) or quinion (in the Middle East, including Yemen, and in Italy). In all these regions the number of bifolia in a quire was limited to six at the most (with the exception of a few manuscripts). Paper quires were usually constructed like the parchment quires in the Orient, and to a great extent also in Ashkenaz, but in the other regions their composition is varied, although regional preferences for this or that composition can be discerned. The mixed quires present a larger variety of compositions.

Summary of quiring practices in Hebrew manuscripts according to geo-cultural zones based on the corpus under discussion

Middle Eastern countries (including Yemen)
During the course of the Middle Ages, from the beginning of the tenth century, the standard quires, regardless of writing material, were quinions except for the regions of Iran and Uzbekistan, in which quaternions were used from the fourteenth century at least.\textsuperscript{52} In this geo-cultural zone, the ratio of manuscripts based on quinions is around 80 percent. The remaining manuscripts contain mainly quaternions (which, as noted, was the standard composition used in the regions of Iran and Uzbekistan), or senions.

Ashkenazic zone (France and Germany)
Apart from a few unusual manuscripts, parchment codices in all periods in these areas used quaternions as the standard quiring composition. In the thirteenth century and also in the fourteenth century, 93 percent of all the parchment manuscript in each of

\textsuperscript{52} The quinion composition is in keeping with the Syriac and Arabic custom. Divergence from the general Oriental custom in the region of Iran is in keeping with the custom in Persian manuscripts, as it crystallized during the second half of the 13\textsuperscript{th} century. The few Arabi-Christian manuscripts whose quire compositions have been inspected reveal a quaternion construction, see J. Grand'Henry, ‘Les signatures dans les manuscrits arabes chrétiens du Sinaï – Un premier sondage’, in: Hoffmann (ed), *Codicologie comparée*, pp. 199-204.
these periods display this construction, and in the fifteenth century 94 percent do. The dominant distribution of this quiring composition in France and Germany does not parallel its ratio among Latin manuscripts before the fifteenth century, nor does it match the heterogeneity of the composition of the latter group, a point that casts doubts regarding the degree of influence Latin manuscripts had on the production of Hebrew manuscripts in these regions.\(^53\) This is also the most common quire composition in paper manuscripts in these regions (41 percent), although the quires in 36 percent of these manuscripts are senions.

When the quires were made of parchment whose sides were distinguishable, their bifolia were arranged with matching sides, each quire beginning on the hair side.

**Italy**

**Parchment manuscripts.** The standard quiring of the Italian parchment manuscript in all periods was the quinion, paralleling the Oriental practice and unlike the practice of quaternion quiring, which characterized all the other Jewish geo-cultural regions in Europe. It occurs in almost all of the manuscripts produced by Italian scribes, and its rate is higher than that of the same standard quiring in the Middle East, and slightly lower than the distribution of the standard quaternion quiring in Ashkenaz.

Although the earliest dated manuscripts that have survived from Italy from the final quarter of the eleventh century and until the 1280s present a uniform quinion composition, the infinitesimal\(^54\) number of such manuscripts before the middle of the thirteenth century raises doubts whether this was the only composition used in the early era. This doubt is greatly reinforced after examining the quiring of non-colophoned manuscripts that were undoubtedly produced in Italy in the eleventh

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\(^{53}\) The following are the rates of quire compositions according to the survey in Busonero, Fascicolazione: the quaternion composition in 13\(^{th}\) century France, only 44% (32% senion compositions) of all manuscripts in that period, in the 14\(^{th}\) century – 45% (the senion composition is slightly more common), and only in the 15\(^{th}\) century did the quaternion composition diffuse widely, reaching 71% of the all manuscripts and 90% of all parchment manuscripts (61% of all paper manuscripts have the senion composition). In 15\(^{th}\) century Germany (witnesses from earlier centuries are few) the quaternion composition appears in only 13% of all the manuscripts from that period; in parchment manuscripts the rate of the quaternion composition is 54%, of the quinion composition 25% and of the senion composition – 21%; in paper manuscripts the rate of the senion composition is 86%, of the quinion composition 11%, and only 2 percent(!) of the paper manuscripts in that period have quaternion compositions. Different data on the composition of parchment manuscripts in France in the 14\(^{th}\) (although the trend is similar) are presented by Bozzolo & Ornato, Codicologie quantititative, p. 132: in 57% of the manuscripts in their corpus the quires have a senion composition and in 27% a quaternion composition.

\(^{54}\) Only five dated manuscripts prior to 1252 have survived. For the four that survived from 1072/3 to 1145 see Codices hebraici, Part II, ms. 38, Part II, mss. 43, 48, 71.
century (some of which were copied by the same scribes who copied the dated manuscripts). This examination reveals that most of the codices used quires of an even number of bifolia: three of these early codices were composed of senions, two of quaternions, and two of a mixed composition including both quaternions and quinions.\textsuperscript{55} It emerges that quiring was not standardised in the early era, and the same scribe could produce two manuscripts with different compositions. However, one may also assume that during the early period of Hebrew codex production in Italy (which may be dubbed the ‘Carolingian’ period), the standard use was of evenly numbered bifolia – senions or quaternions – just as the quaternion composition in Latin manuscript was the standard use, almost without exception, in nearly all of Italy’s cultural regions (Benventan, Romanesque, and Carolingian), and in Greek manuscripts in southern Italy\textsuperscript{56} – and only during the course of the eleventh century was it gradually replaced by an odd quire composition.

The assumption that differences in quiring practices in the eleventh century are regional in nature and that the early even composition was the standard in Hebrew manuscripts produced in southern Byzantine Italy (in the provinces of Puglia and Campania), the site of Italian Jewry’s scholarship centres from the tenth century until

\textsuperscript{55} Senion compositions: in most of the quires of MS Parm. 3173 (De Rossi Catalogue 138) known as ‘the Parma manuscript A of the Mishna’. Small parts of this manuscript were copied by the same scribe who copied the earliest Italian manuscript from 1072/3 (MS Vatican Vat. ebr. 31 of the Sifra, which is composed of quinions, see \textit{Codices hebraicis}, Part II, ms. 38), and according to the Italian glosses written in its margin in Hebrew script it was written in Otranto in southern Italy (See Richler & Beit-Arié Catalogue [Vatican] 710); MS Parma Parm. 3259 (De-Rossi Catalogue 139 of the Sifra, written by the same scribe, and which also contains several pages written by the scribe of the aforementioned MS Vatican (these identifications were not noted in Richler & Beit-Arié Catalogue [Parma] 694); MS London Add. 27169 (Margaliouth Catalogue 340), which was dated based on a manuscript written in 10901/1 (\textit{Codices hebraicis}, Part III, ms. 43). Quaternion compositions: first and foremost the famous Kaufman manuscript of the Mishna in the Library of the Hungarian Academy of Sciences (See, M. Beit Arié, ‘Ms. Kaufmann of the Mishna - Its Date and Locality’, in \textit{Collection of Papers on Tanaitic Language}, vol. 2, Jerusalem 1980, pp. 84-99. [in Hebrew]); MS Vatican Vat. ebr. 32 containing \textit{Midrash Va-yigra rabba} and \textit{Sifre}, which may even predate the MS Vatican of \textit{Sifra}. A mixed composition of quaternions and quinions: the famous manuscript of the Bereshit Rabba, MS Vatican Vat. ebr. 30, containing 12 quinion quires and 9 quaternions; MS Vatican Urb. ebr. 2 of the Bible with a fabricated colophon, supposedly from 978/9, written by a later scribe who completed the manuscript, although its antiquity is unquestionable.

\textsuperscript{56} See F. Bianchi et al., ‘La structure matérielle du codex dans les principales aires culturelles de l’Italie du XI\textsuperscript{e} Siècle’, in: Maniaci & Munafò (eds.), \textit{Book Materials and Techniques}, vol. 2, p. 412 (for details on the corpus of manuscripts on which this study was based, see \textit{ibid.}, pp. 365-367). In the previous centuries too, the quaternion composition was the standard custom in southern Italy, see E.A. Loew, \textit{The Beneventan Script: A History of the South Italian Minuscule}, Oxford 1914, p. 290. The same can be concluded from the study by Tristano, ‘Caratteristiche tecnico-formali’, pp. 55-89. A quick examination of Munk Olsen’s monumental catalogue (B. Munk Olsen, \textit{L’étude des auteurs classiques latins aux XI\textsuperscript{e} et XII\textsuperscript{e} siècles}, vols. 1–3 [5 parts], Paris 1982–1989) shows that the quaternion composition was the standard composition in all Western European lands during the 11th and 12th centuries.
their destruction in the thirteenth century, and the site of the production of several manuscripts in the senion composition, is not based on a large number of manuscripts, and what’s more, it is undermined by the fact that the earliest dated manuscript, displaying a quinion composition, was apparently also written in Puglia.

The great uniformity of Hebrew quiring practices in Italy, as well as that of the quinion composition – evidenced increasingly from the mid-thirteenth century – is inconsistent with the practices seen in Latin manuscripts in Italy from the thirteenth to fifteenth centuries. The ratio of Hebrew manuscripts with quinion quiring produced in Italy, outside of the few manuscripts written by immigrants, is 92 percent, but only 21 percent of Latin parchment manuscripts produced there (according to Busonero’s survey) share the quinion construction, and the most common compositions in her corpus are quaternions (41 percent) or senions (34.5 percent). The distribution of quinion quiring in Hebrew codices is stable from the thirteenth century onwards, increasing moderately: 84 percent in the thirteenth century, 90 percent in the fourteenth century (70 percent before mid-century and 97 percent in the latter half century), 94 percent in the fifteenth century (without noticeable differences over the course of the century). As opposed to the conservatism of the Hebrew scribes, the Latin manuscripts, according to Busonero’s survey, reflect a dynamic of change over the centuries: in the fourteenth century quinion quiring more than duplicated its distribution to 44%, en route to becoming the standard quiring in the fifteenth century (75 percent).

I have already noted above (note 21) that each of the first nine Hebrew manuscripts whose quires begin with the flesh side (from 1280 to 1313) diverge in terms of composition from the standard quinion compositions, and their quires are quaternions

57 Derolez found a similar rate (Codicologie, vol. 1, p. 35) among the 1,200 Humanist parchment manuscripts from the 15th century (77.8%). The data on quiring in a smaller corpus analysed by Casagrande Mazzoli, and Ornato – who were chiefly interested in comparing ‘monastic’ manuscripts with Humanist manuscripts – clearly indicate the survival of the quaternion quiring among non-Humanistic manuscripts despite the expansion in the use of the quinion composition, see M.A. Casagrande Mazzoli & E. Ornato, ‘Elementi per la tipologia del manoscritto quattrocentesco dell’Italia centro-settentrionale’, in: Busonero (ed.), La fabbrica del codice, pp. 207-287. Emphasis should be given to Ornato’s explanation (Apologia, p. 65) that the source for the appearance of quinion quires in Italy at the end of the 13th century is in oversize annotated legal codices that were produced in Bologna. Eighty percent of these, written in the 13th and 14th centuries, were composed of quinions. The production of large formats (in-folio) did not involve folding, and therefore there was nothing to prevent the use of quinion quiring. The abundance of in-folio manuscripts in Italy led to the spread of quinion quires, and they became the standard composition.
or senions, like most of the Latin manuscripts. It may be that the practices of Latin quiring can shed light on whether this dependency is coincidental.

The parchment quires are arranged according to matching opening sides. Before 1280, each quire began with the hair side; later the custom of beginning the quire with the flesh side began to spread, reaching its climax in the fifteenth century, when it is seen in sixty percent of manuscripts.

**Paper manuscripts and mixed paper and parchment manuscripts.** Quires made of paper or mixed quires were not constructed by standard composition methods in the same way that parchment quires were constructed, but according to a variety of compositions. The earliest extant paper manuscript made of quaternion and quinions already indicates the divergence of the paper codex from the uniform quiring practice and regularity of parchment codices. Less than a third of all the paper manuscripts in the corpus – nearly all from the fifteenth century and the first two decades of the sixteenth century – were constructed according to the usual quinion parchment quiring. Although the distribution of quinion quiring was not yet so broad, its use was the most prevalent. Close to a quarter of these manuscripts are made of senions, with a similar rate of eight-bifolium quires in this group. Other compositions (seven-bifolium, nine-bifolium, and more) were used in a negligible number of manuscripts.

The composition of the mixed quires is also varied. The eight-bifolium composition, appearing in some third of the mixed quire manuscripts in this corpus, takes precedence over the ten-bifolium composition (appearing in almost a quarter of them) or the senion or nine-bifolium compositions (each of which appears in about one eighth of them).

**The Sefardic zone (the Iberian Peninsula, Provence, North Africa, and Sicily)**

**Parchment quires.** The standard composition of the quire in the Sefardic parchment codex, in all the periods, was a quaternion. The quaternion quiring was in use in 80 percent of these manuscripts, without discernible variations in the rates of its compositions.

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58 Seemingly, already then there were readymade quinion quires that began with the hair side, according to the older tradition, and copyists who wanted to work with either smaller or larger quires could either add or subtract an external bifolium and have the quire begin with the flesh side.

59 MS St. Petersburg, Oriental Institute B 396, written between 1276/7 and 1284/5.

distribution over time. Before 1275 all the Sefardic parchment manuscripts in the corpus were composed in this manner, apart from a few manuscripts from Toledo (see below). From that year onward, we find a limited proportion (15 percent) of an alternative senion structure. The quinion structure was known in the Sefardic zone, but it was rarely used, and appears in only six parchment manuscripts. In the dated manuscripts produced in Toledo (and perhaps in other places), until the middle of the thirteenth century, and in a few produced in the second half of the century, the unusual ternion composition is found.

Quires were arranged with matching sides, and each quire begins with the hair side, except for a few manuscripts from the fourteenth and fifteenth century, in which the quires begin with the flesh side.

**Paper manuscripts and mixed paper and parchment manuscripts.** As opposed to the comprehensive use of the quaternion structure and the limited use of the senion structure in parchment manuscripts, paper quires composed of quaternions are few, appearing only in 4 percent of the manuscripts, while the senion composition is widespread and appears in almost half of them. Another composition, less prevalent yet appearing in a third of paper manuscripts or mixed paper and parchment manuscripts, was the eight-bifolium quire. The frequency of this composition in mixed quires can be explained by the common practice of wrapping a senion quire with an outer and inner parchment folio. The quinion composition appears in only seven percent of paper manuscripts.

**Byzantium**

**Parchment manuscripts.** Despite the position occupied by Byzantine manuscripts in-between the zones in which quinion compositions were widespread – the Orient and Italy – the standard composition of the parchment codex was of quaternions arranged with matching sides beginning with the hair side.

**Paper manuscripts and mixed paper and parchment manuscripts.** As in other zones in Byzantium, there was no standard quiring practice either in paper manuscripts or in mixed paper and parchment manuscripts, but rather a variety of compositions were in use. As in the Sefardic regions which made intensive use of paper, so also in Byzantine the preferred composition was that of the senion quire, and it appears in almost half of the paper manuscripts.
Tables 17-19: Quiring practices classified by geo-cultural entities

On the basis for the statistical calculations in the tables below, see above in the introduction in the section on the ‘General statistics of the database’ (at the top of table 5). The following statistics are based on the corpus of the dated codices until 1500 which are not fragmentary and the structure of most their quires is clear and uniform.

Table 17: Quire compositions in parchment manuscripts

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Table 18: Quire compositions in paper manuscripts

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</table>
Table 19: Quire compositions in paper manuscripts

(1) quaternion  (2) quinion  (3) senion  (4) 7 bifolia  
(5) 8 bifolia  (6) 9 bifolia  (7) 10 bifolia  (8) 11-14 bifolia

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</table>

**Binding**

Binding of the manuscript quires was performed, naturally, after completion of the copying. Data on the binding of books in the Middle Ages are very limited, and more scarce even is the knowledge about the technology and craft of Hebrew bookbinding. Few of the manuscripts have been preserved in their original bindings or in renewed bindings deriving from an early period, and therefore no research concerned with the various technologies of bookbinding and their transformation in the geo-cultural zones of the Hebrew book craft has developed, nor has there evolved a study of the art of decorative stamps on the leather coverings of the binding boards in Hebrew books. The well-developed research of manuscripts bindings of non-Hebrew books from the Christian and Muslim lands,61 of which many have survived, and their typology, may be of service to the study to the bindings of Hebrew manuscripts, for it may be assumed that the former were not bound differently from the Hebrew manuscripts, as evidenced by the remains of original Jewish bindings from both Occident and Orient. Moreover, literary sources and the few original bindings that have survived show that

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61 See, e.g. the illuminating studies in Maniaci & Munafò (eds.), *Book Materials and Techniques*, vol. 2, pp. 157-268. Especially useful is the Dutch glossary for binding terms and codicological terms related to binding (above, chapter 3, n. 29) due to the illustrations and equivalent German, French, and English terms included in it. For the development of ways of describing bindings and the related terminology, see recently *La reliure médiévale: Pour une description normalisée – Actes du colloque international* (Paris, 22–24 mai 2003) organisé par l’Institut de recherche et d’histoire des textes (CNRS), ed. G. Lanoë, Turnhout 2008.
in Europe Hebrew books were given to Christian binders for binding and vice versa, Jewish binders bound books for Christian institutions, both clerical and secular.\textsuperscript{62} The term \textit{כרך} (which designates volume in modern Hebrew) refers in the language of the Mishna and Talmud to scrolls, because it is derived from the root \textit{כרך} which means to roll.\textsuperscript{63} This is its usage in the language of the \textit{baraita} in B. Bava Batra 13b that discusses whether it is permissible to divide the holy scriptures: דתנן, ובכתבי התורה אעפיום ש鹕וקי רעיין لا ילקטו אום שומואל אל שמי אלא בכרך אוף אחד ביא לחוכמא הוולכין.\textsuperscript{64} Like other terms in Hebrew, Greek, Latin, and Arabic, which originally referred to scroll shaped books, and subsequent to the evolution of the book form were adopted in reference to codex book craft, the binding terms were likewise used to refer to the codex. Indeed the task of binding was describing in terms of tying (the root \textit{קש"ר}), which is well suited to the work of sewing quires and tying them to the binding boards. We thus find in \textit{Sefer Hasidim},\textsuperscript{65} the chief source of information about book craft in Germany at the turn of the twelfth and thirteenth centuries: ו‹אם אתה צדיק מקברו וחלצו בגדיו והכוהו, בא לאחד בחלום ואמר לפי› שהייתי רואה ספרים נמחקים ולא הייתי קושרם בטבלאות.


\textsuperscript{63} Compare the term \textit{תכריך} that signifies a vertical scroll (above, chapter 1, n. 30).

\textsuperscript{64} MS Hamburg, SUB Cod. Hebr. 19 (Steinschneider Catalogue 165; according to the Talmud Text Databank at the Saul Lieberman Institute of Talmud Research). The context and the ensuing talmudic discussion make it clear that the \textit{baraita} is referring to a single scroll, and this is how it was understood by Rashi, in his commentary: \textit{בכרך אחד} – \textit{כל ספריה נעשויין בגיליון <היינו מגילה> אם יביאהו לב”ד לחלקו בזיון הוא, אבל две כריכות} – \textit{כגון תורה בכרך אחד ונביאים בכרך אחד}. On the other hand, the expression \textit{בכרך אחד} in T. Bava Metzi’a 2.8 (S. Lieberman (ed.), \textit{The Tosefta according to Codex Vienna}, v. 5 [Neziqin], New York 1988, p. 70, passage 21) - מגו ספריה קורא ברוך והשלהים jim, והאייקיר בן יאיר – הפשהית יאש, אל יאיר בחו את הפרשה ותרבש, אלא יאיר שלשל תכרך אחר, ואל יאיר打交רכ המספלה הפר – and in the parallels in the Babylonian and Palestinian Talmuds, means ‘at once’, see S. Lieberman (\textit{Tosefta ki-feshuta, 10: Seder Neziqin}, New York, 1988, p. 163-164).

\textsuperscript{65} All the citations henceforth are from the Wistinetzky & Freimann, edition, unless otherwise indicated.

\textsuperscript{66} The term \textit{טבלאות} to denote a hard binding (made of wood), to which the quires were attached by threading through slats, was commonly used also in the many book lists from 15\textsuperscript{th} century Italy. These book lists also frequently mentioned colourful leather coverings. In a book list written in Lugo in 1493, the library owner of 65 books boards covered in black leather (\textit{ס言えばי מפוס הכִּיס עֲרָי מִשְׁרוֹן} (and also frequently included mention of covering \textit{מפוסי} רוע \textit{מפוסי מייס} [covered in leather] or \textit{מפוסי} \textit{מכוסי [covered], in various colours}), \textit{ומכוסה ערב בפִּיס}, \textit{ומכוסה פִּיסכִים}, and so on. See G. Vajda, ‘Un inventaire de bibliothèque juive d’Italie’, \textit{REV}, 126 (1967), pp. 473–475. Similar usages are found for the most part in book lists from Cesena from 1445, published by Sonne, e.g.
And elsewhere in the book, on handing over a book to a monk for binding:

This source indicates that the Jews themselves were bookbinders, and that even the stringent and pious Ashkenazi Hasidim permitted books to be bound by monks, who were more expert at this craft. *Sefer Hasidim* prohibits the use of boards that had become detached from Christian books, or of bifolia or filios from Latin or Greek books for covering the bindings of a Pentateuch (as is found in European libraries where numerous manuscripts and old print books in Latin characters have exterior and interior bindings that are pasted over with parchment bifolia or folios taken from Hebrew manuscripts, including the thousands of notary registries bound in a soft binding made of some Hebrew fragments, which have been discovered recently in Italian archives)⁶⁷:

Comparing other prohibitions regarding book craft that are mentioned in *Sefer Hasidim* with customary practices evidenced in the German Hebrew manuscripts

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⁶⁷ See above, chapter 1, n. 57.

⁶⁸ Simcha Emanuel pointed out to me a similar expression in *Sefer Mitzvot Gadol*, Lavin, passage 45: הביעים שם מינו בדולק צרך כשמו שלושה זרbihור נודגש והזוהו לבצע תפילת האבות עם עשרת הדברות והאלהים. ופעם הביעים שם מינו בדולק צרכם שלושה זרbihור נודגש והזוהו.perform a similar operation. The continuation of the passage implies that German Jews might have owned Latin translations of the Bible: את הי ניסים שצרכם שלושה זרbihור נודגש והזוהו.perform a similar operation. This text is not included in the parallel passage (no. 699) in MS Parma.
shows that these prohibitions reflect the prevalence of those practices.\textsuperscript{71} \textit{Sefer Hasidim} also mentions the book clasp of the type used in Europe:

ספר שנוי לא יחלוץ ומסגרת לא ישים ברכו על ספר ולוחך של ספר לפי קירור ספר

As mentioned in chapter 2, section 1 (at the end of the discussion on vocalisers and masoretes, illustrators, proofreaders, and binders), one manuscript written in a Sefardic script has survived from Lecce in southern Italy, whose copying was completed in the 27\textsuperscript{th} of Ab 5245 (1485 C.E.) and which includes a colophon by the binder from the 2\textsuperscript{nd} of Nissan <5>246 (1486 C.E.) that also uses the verb ‘to tie’:

קשורת אני קרשתי קליפים הוא כותרים על חותך. א细菌 USAGE is evidenced in the indication of ownership at the end of MS Paris Hébreu 674, which was written in Italy in the 14\textsuperscript{th} century:

בג ли שמואל > < בהכי שברוי > < חלק > < גבר > < בד > < חתך > < לד > < הקשורת יลอยה בכר בד ספר כי ניטע > < לקשור אלי הקנטיסים

One of the first printers, Avraham ben Haiyam of Pisarro, who continued to print the \textit{Arba'a Turim} which Avraham Conat had begun to print in Mantua, referred to himself in the colophon of the \textit{Tur Yore De'a} (Ferrara 1478/1479 should be 1475/1476) as \textit{אברום מקושר בן חיים ויאת}, indicating that his previous trade had been a binder.\textsuperscript{72} Notary documents from Perugia (Umbria, Italy) from 1507-1511 attest to the existence of a bookbinding shop belonging to Solomon ben Yo'av (di Dattilo) of Fabriano (in partnership with Haiyam of Perugia), who was a member of the bookbinders’ guild and the owner of book and stationery stores in Perugia, and who even employed four young apprentices.\textsuperscript{73}

The word \textit{קשורת} was used in a number of Italian booklists to describe a volume,\textsuperscript{74} as was the word \textit{חתיכה}.\textsuperscript{75} In the Middle East, in Judaean-Arabic booklists from the Geniza

\begin{footnotes}
\footnote{71 See Beit-Arié, ‘Ideals Versus Reality’.
\footnote{72 A photograph of the colophon page appears in A. Freimann (ed.), \textit{Thesaurus Typographiae Hebraicae} (above, chapter 2, n. 248), 2, A5.
\footnote{74 Already in the 12\textsuperscript{th} century book list found in the beginning of MS London Add. 27169 (see its copying, below, in the appendix to this chapter, n. 52), and like the one recorded in the beginning of MS Bologna, BU Ms. 3574b.
\footnote{75 E.g. Rothschild, \textit{Listes des livres en Italie}, p. 305, no, 78 (בעב ויתר). For this term see N. Allony, \textit{‘Hatikha, Ḥatikhot’}, \textit{Leshonenu La’am}, 135-136 (1962/3), pp. 88-91 (in Hebrew). The term \textit{חיתך} to denote a volume appears in an Italian book inventory from Imola from 1384/5 (Bonfil, \textit{‘List of Hebrew Books’}, p. 60, no.7). The term \textit{قياسה} (in plural \textit{قياسות}), which appears in a list of incunabula and manuscripts from Spain or Portugal close to the time of expulsion (see S.M. Iakerson, ‘An unknown list of Hebrew books’, \textit{Manuscripta Orientalia}, vol. 4, no. 1, March 1998. p. 18) where the expression \textit{崮צים} also appears) is presumably a phonetic spelling of the term \textit{قياسה}.}}}

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the termجلال maths a noun that meant in Arabic ‘volume’, and also an adjective meaning ‘bound’. 76

Box binding was one type of binding used in Hebrew manuscripts that was apparently unique to Spain. It was first described by Leila Avrin in her discussion of four Sefardic manuscripts (one from Lisbon) from the final quarter of the fifteenth century. 77 However, in the meantime, several other manuscripts in box bindings have been discovered, some of which were produced in Yemen. 78 This type of binding was also found in Arabic manuscripts, just as it was used in binding of Qur‘ans in Kairouan during the ninth century. 79

Other discoveries include the artistic bindings whose covers were made with a special technique of embossed leather, by the scribe Meir ben Isra‘el Jaffe of Heidelberg during the second half of the fifteenth century. 80 In 1468 he bound an old Ashkenazic Pentateuch (MS Munich, BSB Cod. Hebr. 212), and in the front binding plate he

76 See Allony, Jewish Library, according to the index. It appears that its main usage there is in the sense of a volume. On a professional binder from Al-Mahalla, see Goitein, Mediterranean Society, vol. 2, p. 239.
77 L. Avrin, ‘The Sephardi Box Binding’, in Library Archives and Information Studies, ed. D. Schidorsky (Scripta Hierosolymitana 29), Jerusalem 1989, pp. 27–42. The most famous of these is the Kennicott Bible kept in the Bodleian Library in Oxford, MS. Kennicott 1(a Bible and Sefer hamikhlo by David Kimhi, written in La Coruña [לגו קורנה] in 1476 by Moshe ben Ya‘aqov ibn Zabara for Yitshaq ben Shelomo de Braga and which was decorated and illuminated by Yosef ibn Ḥayyim. The decorative box binding was accompanied by a splendid satchel that contained the volume (designated as MS. Kennicott 1*). Another manuscript encased in a box binding is MS Schocken 24360 containing a Pentateuch, Haftarot, and the Five Scrolls (offered for auction at Christie’s on November 15, 2005 in New York, see Important Hebrew Manuscripts from the Salmon Schocken Collection [Auction Catalogue], New York 2005, Lot 13.
78 The last of these is a Pentateuch manuscript written in San’a in 1498, apparently by the famous scribe David ben Benaya ben Sa‘adiah (kept until recently in Westminster College in Cambridge and sold on auction on June 29, 2007 at Sotheby’s auction house, see Western Manuscripts and Miniatures [Auction Catalogue], London 2007, Sale no. LO7240. Another manuscript in a box binding was also written in San’a in 1481 by Yosef ben Benayah ben Sa‘adiah (MS London, David Sofer Collection 6, formerly MS Montreal, Judah Elberg Collection 282). I am grateful to Angelo Piatelli who drew my attention to this manuscript.
80 He was the copyist of the undated Cincinnati Haggadah, Cincinnati, HUC 444, as well as of the London Haggada, London, BL Add. 147 62 (illuminated by the scribe-illuminator Joel ben Simeon, and with the help of Christian artists), as identified by Mordecai Glazer (see M. Glazer, ‘The Ashkenazic and Italian Haggadah and the Haggadot of Joel ben Simeon’, in The Washington Haggadah: A Facsimile Edition of an Illuminated Fifteenth-Century Hebrew Manuscript at the Library of Congress Signed by Joel ben Simeon — Commentary volume, ed. M.M. Weinstein, Washington 1991, pp. 139–144). In addition, he is to be identified as the copyist of MS New York MS 4057 (a mahzor in the Ashkenazic rite, which according to the name noted in the poem for the ḥatan tora, on fol. 321v, was written for the owner of the abovementioned London MS) and MS Hamburg, SUB, Cod. Hebr. 243 (a prayer book according to the Ashkenazic rite, in which the name Meir was highlighted), as observed by Yael Zirlin.
embossed the inscription.\textsuperscript{81} And indeed, in the protocols of the Nuremberg city council from 1468 a decision was found permitting the Jew Meirlin of Ulm to stay in the city in order to bind a number of books for the council. Art historians have attributed to Meir ben Isra’el Jaffe additional bindings of a style similar to the binding of the abovementioned MS Munich.\textsuperscript{82}

\textsuperscript{81} An image of this binding can be seen also in \textit{Encyclopaedia Judaica}, Jerusalem 1971, vol.2, col. 1228.

Appendix: הקונטרס - the distribution and spellings of a term and its codicological meanings

The earliest usage of the term הקונטרס (quire) in extant Hebrew texts whose date is known is apparently in Rashi’s commentary on the Talmud. Its meaning is apparent there from the context of its usage.2

[a] Rashi on B. Shabbat, 115b. Lemma טומוס (a term appearing in the *baraita* there: נטט טומוס של ברכות ושקע) (printed version); lemma טומטס: קבוצת קונטרסים (MS New York R. 718, written in Italy in the thirteenth century); lemma טומטס: קבוצת קונטרסים (MS Vatican Vat. ebr. 138, an Ashkenazic manuscript from the middle of the thirteenth century?); lemma טומטס: קבוצת קונדרסים, is a version similar to the MS Vatican version, which appears in three manuscripts in Sefardic scripts from the fourteenth century (MS Paris Hébreu 324; MS Parma Parm. 2087; and MS London Or. 5975, which may have been written in Italy in the fifteenth century).4 Similar versions to that of the Ashkenazic MS Vatican also appear in Byzantine manuscripts:


2 According to a search of the database of halakhic texts at Bar Ilan University’s Responsa project, version 22+. The manuscripts were identified with the help of the catalogue of the Institute of Microfilmed Hebrew Manuscripts at the National Library of Israel in Jerusalem, and were examined according to the microfilms archived there. I was also assisted by the list of manuscripts of Rashi’s commentaries for the Talmud (edited by S. Pick and S. Munitz, Ramat Gan 1998), published as a booklet by the Rashi Project at the Institute for the Study of Post-Talmudic Halakha at Bar Ilan University. The list is based on the collections of the Institute of Microfilmed Hebrew Manuscripts.

3 The meaning of the Greek-Latin term *τομος*=tomus in the *baraita* is a vertical scroll (see above, chapter 1, n. 30) and not a codex – the meaning that Rashi attributes to the term in his commentary here.

4 Indeed, according to the documentation of all the Hebrew colophons, which are authentic linguistic documents, most of them dated, and about half also localised, it emerges that in the Sefardic manuscripts – both those produced in the Iberian peninsula and in Provence (and perhaps also in North Africa) and those produced in Italy or in Palestine by Sefardic immigrants – the spelling of the codicological-bibliographical term הקונטרס (קונדרס) is always הקונדרס (קונדרס). See, e.g. the colophons of MS Munich, BSB Cod. Hebr. 243 (Spain, early 14th century); MS Paris Hébreu 733 (Provence, 1395; see *Manuscrits médiévaux*, II, 40); MS Firenze, Bib. Laurenziana Plut. II-1 (Ferrara, 1396); MS Hamburg, SUB Cod. Hebr. 21 (Arles 1454); MS Oxford MS. Kennicott 1 (La Coruña, 1476); MS Oxford MS. Opp. 548 (Safed? ca. 1500).
lemma נימוס (MS New York R. 831 from the fifteenth century), lemma טימוס (MS New York R. 841 from the fourteenth century). It will be demonstrated below that the version קוטרסין in the fourteenth century Byzantine manuscript is not a corruption or simple elision of a letter, but a different linguistic tradition and perhaps even a different term, which may also reflect a different composition of the quire.

The meaning of the term in Rashi is clear: Rashi, glossing the word טומוס as a codex attributes to this word a meaning that is later than its usage in the source, for Jews adopted the codex much later, apparently not before the eighth century, and he justly explains that a codex is a grouping of quires, i.e. a number of folded bifolia sewn at the fold to create a kind of notebook – the molecular building block of the codex, which is composed of a grouping of quires tied together by binding.

[b] Rashi on B. Menaḥot 32a. lemma גלועי'ן עץ סדוק הנושק דפי קוטרסין (printed version). I did not find manuscripts of Rashi’s commentary on this part of Tractate Menaḥot in the Institute of Microfilmed Hebrew Manuscripts, and it may be that none have survived, but cf. the following occurrence in the parallel commentary to B. Shabbat 98b. According to this comparison, it is clear that the original version was certainly קוטרסין (was presumably to be read קוטסר). The manuscripts for abovementioned source [a] do not contain significant variants that are pertinent to this issue. The non-Hebrew term has been commented on by Darmstatter and Blondheim, and by Moshe Catane, who translated and adapted their study. The explanation is unsatisfactory, but it appears that Rashi’s language in

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5 Written by a copyist presumably named Baruch, according to the highlighting of the letters at the beginnings of lines, seemingly in acrostic form, on fol. 137v.
6 Unlike his astute observation elsewhere that books during the times of the sages were all written in scroll form, similar to our Tora (Rashi on B. Megilla 19a, lemma הנכתובה בין הכתובים; cf. his commentary on B. Gittin 60a, lemma בחרושת: וכל ספריהם היו במגילה כס"ת שלנו). Cf. above, chapter 1, n. 5.
7 In MS Parma: דפי הקונדריס. The Sefardic scribe of MS Parma is loyal to this spelling, just as he used it in his commentary to B. Shabbat 115b (see above under source [a]). The Sefardic scribes of MS London and MS Paris were not similarly loyal, and employ the standard spelling. In MS New York R. 841 הקונטרס and not הקוטרס like הקוטרסין in his commentary on B. Shabbat, ibid.
8 See Catane, Gloses, no. 341 and no. 1976 (Menaḥot). The identification is as gloon which means a piece of wood bent at the edge; this is how Catane translated the explanation 'morceau de bois fendu' in A. Darmstater & S. A. Blondheim, Les gloses françaises dans les commentaires talmudiques de Raschi, I, Paris 1929, p. 77, no. 551, but this should rather be translated a slit piece of wood, i.e. a peg.
Menahot explains the object’s action but not its purpose: Rashi is speaking of a wooden clip that apparently was used by copyists as they worked, or by readers while reading in order to clasp together the pages of the quire, which in Rashi’s time were of course made of parchment (and usually a thick parchment), to prevent them bending and interfering with the copying or reading.

In these three sources it is clear that the meaning of the term is codicological and that it denotes the production unit of a book in codex form. However, Rashi used the term *קונטרס* in its bibliographic meaning as well, according to the double connotation of all words that denote books in most languages – both to signify the container of a text and the text transmitted by it:

[d] Rashi on B. Gittin 82a. lemma

א’il מי ברנ קס. כ הוה עיירה של סינות וללאשמעית: כ אלא בביאורה בקונטרס מורי הזקן (printed version);

c כ הוה עיירה של סינות וללאשמעית: כ אלא בביאורה בקונטרס מורי הזקן (MS Vatican Vat. ebr. 140), an Ashkenazic manuscript copied by a scribe named Moshe, apparently from the fourteenth century, containing the talmudic text with Rashi’s commentary in the margins; a similar version is found in MS Aras, Municipal Library 889, copied by Nehemiah ben Hayyim, a manuscript of the same provenance and dating as MS Vatican, except that the word there is abbreviated: כ עקר סנתי וללא שמעית כ אלא בביורו בקונטרס מורי הזקן (MS Rome, Bib. Angelica, Or. 57, an Italian manuscript from the early fourteenth century, where the scribe highlighted the words בקונטרס and ומורי in an acrostic); and a similar version כ עקר של סינות וללא שמעית כ אלא בביורו בקונטרס מורי הזקן (the Ashkenazic MS Vatican Vat. ebr. 135);

c עקר של סינת וללא שמעית כ אלא בביורו בקונטרס מורי הזקן (MS New York R. 832, a Byzantine manuscript copied by Elkanah ben Moshe for Absalom Bona Vita in the fifteenth century at the latest).

Recently Randall Rosenfeld of Toronto, who is working on compiling a collection of scribal tools (Corpus Instrumentorum Scribendi, cf. Rosenfeld, ‘Tools for Producing Books’), has distributed among European codicologists a photograph of a miniature of a copyist from the Latin MS Lyons, Bibliothèque Municipale 410, and asked which of them could identify an unknown instrument appearing in the illustration. There is no doubt that this is an image of the very same אטבא דספרי mentioned and described by Rashi: a split pin that holds together the parchment leaves during copying.

For various explanations of the uses of the tool mentioned in the Babylonian Talmud, some similar to the solution offered here and others relating to the technique of prickings that guide the ruling of lines – apparently a compass – see Danzig, ‘Ruling’, p. 311.

9 If indeed it was customary to write pages consecutively in a quire of folded (but unstitched) bifolia, rather than separating the bifolia and writing each page according to order on a spread out sheet prior to folding.

10 The epithet used for his first teacher in Mainz, Rabbi Ya'akov ben Rabbi Yaqar.

11 See below for the version *קונטרס* in Byzantine copyings (cf. source [a] above) and for its possible codicological meaning.
Rashi’s use of קונטרס in this source is different from the previous usages. There is no doubt that Rashi did not intend to specifically indicate a codicological unit – a single quire of folded bifolia, nor the physical book object – but rather a unit of text written as a codex and in this case the written commentary by his teacher.12

A similar bibliographic meaning appears also in the following source:

[e] Rashi on B. Kritut 22b. lemma רבי עקיבא סבר אשם לכסף שקלים: ואיך פירש רחמנא והכי פירש רחמנא והוא הוא שבקונטרס אלא עיון מבואר ומסתכל (printed version). No manuscript versions of this passage of the commentary have survived, and therefore we cannot verify our surmise that this is not Rashi’s own language, but rather a gloss by one of his students or editors, because the word, as it appears here, in the standard form identical to the language of the Tosaphists, as we will see below, seems to denote Rashi’s own commentary – a familiar bibliographic usage. Indeed, a similar occurrence of the word in another place in the printed version of Rashi’s commentary is an explicit editorial gloss. In the commentary to B. Eruvin 4a, at the end of the commentary to lemma והוא הוא שבקונטרס, we read: כך שנאמרש בקונטרס שApiModelProperty ורבי עקיבא. In a manuscript I examined13 this gloss was not copied. As is well known, the Tosaphist oftentimes cites Rashi’s commentary on the Talmud, usually with the formula פירש בקונטרס (e.g. B. Shabbat 78b, lemma דב; ibid. 112b, lemma סנדל, etc.).14 Is קונטרס used by the Tosaphists according to its codicological or bibliographic meaning? Or did the Tosaphists mean the actual manuscripts of the commentary, which may have been distributed as individual quires,15 or is Rashi’s commentary simply called קוניתיס as in Rashi’s own usage in his commentary on B. Gittin (בקונטרס ופיו לאדיש)? It would appear that the other formulations used by the Tosaphists leave no doubt that the term in question is a bibliographic one, e.g. נאrabbit בקונטרס (B. Pesahim 46a, lemmaлепלולה, i.e. in the Tosaphists, the plain word קוניתיס, which was a synonym for book, referred to Rashi’s commentary on the Talmud. It should be noted that other formulations appear to suggest a

12 See E.M. Lipschütz’s discussion of the term קוניתיס in his book on Rashi which was alsoanthologized in the edition of his complete works על שם פירוש על התלמוד שהועלה על הכתבים קוניתיס על שם פירוש על התלמוד ששב בתוכו,缭עון וכתיבת אוסף תוספות וباحث שביסע (Ketavim, vol. 1, Jerusalem 1947, p. 57).
13 E.g. MS Paris Hébreu 324 (above in source [a]), MS Vatican Vat. Ebr. 127 (Ashkenaz, 14th century), MS Oxford MS. Opp. Add. 4° 23 (Neubauer Catalogue 420; Byzantium, 15th century).
15 As explained by Elijah Levita (Baḥur) in his dictionary haTishbi, see below at the beginning of part 2 of the appendix.
bibliographic-chronological distinction between the פירוש and the קונטרס, e.g. בקונטרס נפתיי רשיי האוספיםו בתוכחת יד פירוש ועבורי עלפי קודם (B. Hulin 137b, lemma 16) or the usage of פירוש רשיי alongside the קונטרס (see, e.g. B. Berakhot 27b, lemma as opposed to lemmaإجراء). Only a systematic examination of all these mentions by the Tosaphists may clarify this matter17.

Was Rashi really the first to use this loanword? Not necessarily. The term is also used – whether according to its codicological or bibliographical usage is unclear – in a commentary attributed to Rashi on B. Ta’anit 21b, lemma ולמר מחר ההוא: ובראש קונטרס ימי אתה מוצא תשובת רבים (printed version; another version according to ממסור תוספות ימי: הביא ברך; and in the manuscript version: ובראש קונטרס תשובת ימי אתה מוצא תשובת רבים (MS New York R. 866,18 written in Italy in the fourteenth century and MS New York R. 840, written in Italy in the fourteenth to the fifteenth century). As is well known, this commentary is one of the Mainz (מסמס) commentaries, the identity of whose authors and editors, and likewise of its literary strata, has still not been confidently established: to what degree do they contain sediments of Rabbi Gershom ben Yehuda Me’or HaGola’s commentary, and were they edited by Mainz scholars during the second half of the eleventh century, or perhaps by Worms scholars during the early twelfth century?19 It is therefore not inconceivable that the usage in this source post-dates that in Rashi’s commentaries. Either way, the word קונטרס can be said to appear in the regions of Ashkenaz (northern France or Germany), for the first time in France, in Rashi’s writings, both as a codicological term – to denote the codex unit, and metaphorically for a book. From that point onward the term spread throughout the zones of European Jewry.20

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17 For the use of the word קונטרס also in comments made by copyists (or editors) in regard to Rashi’s own copyediting of his commentaries to the Prophets and which appear in several manuscripts, see J. S. Penkower, ‘Corrections and Additions to Rashi’s Commentary on Joshua by Rashi, His Students, and Anonymous Correctors’, Shnaton: an Annual for Biblical and Ancient Near Eastern Studies, 16 (2006), pp. 205-229 (in Hebrew).
18 For this manuscript, see D. HaLivni, Sinai, 43 (1958), pp. 213-214 (in Hebrew).
19 See A. Grossman, The Early Sages of Ashkenaz (see Chapter 1, n. 91), pp. 165-174 (in Hebrew). In respect to the commentary on B. Ta’anit (according to the first MS New York), Halivni already demonstrated (ibid.) that its first three pages are parallels of the commentary by Rabbi Gershom ben Yehuda printed in the new Vilna editions.
20 The codicological sense of the term appears in the responsa of Rabbi Yosef ben Meir HaLevi ibn Migash (Salonika, 1790/1). This would seem to suggest that it was already in use in an early period in
Before discussing the word’s etymology, we should briefly mention versions of the other foreign words that were corrupted and used by copyists and editors for this commonplace word in apparently earlier sources.


2. *Midrash Tehillim* 45:5, S. Buber edition, Vilna 1890/1 (according to MS Parma and most other manuscripts): משל למי שמבקש עלולה לבימה, נטל קר特斯 ונתן לו לדיין. The Greek word קטרס, which appear in *Midrash Tehillim* in correct transliteration, was rendered in the printed editions of *Yalqut Shim’on*, Tehillim par. 749 as our word, undoubtedly due to the semantic affinity: משל > נטל קטרס שכבה ונתן לדיין.22

3. Tosefta *Bava Batra* 5:12 (According to MS Vienna). מסמס שני קטרוסין קטרוס שתי פרותות. This version is merely a corrupt spelling, and it does not exist in the Erfurt manuscript, or in the parallel texts in the

Spain; however, these responsa were translated from Arabic at a period much later than Ibn Migash’s lifetime.


22 In Greek χαρτής and in Latin ‘charta’, a piece or sheet of writing material (certainly not paper, as indicated in *Musaf he’Arukh* unless the word was used in its talmudic sense, i.e. papyrus), or as Sperber indicates a document (ibid. p. 172). See Sperber, pp. 194-195. And cf. M. Sokoloff, *A Dictionary of Jewish Palestinian Aramaic of the Byzantine Period*, Ramat-Gan 1990, p. 269, s.v. כריסטס. This Greek term was borrowed by way of Aramaic and Syriac into Arabic, see S. Fraenkel, *Die aramäischen Fremdwörter im Arabischen*, Leiden 1886, pp. 245–246.

23 As far as I was able to ascertain, no manuscript of this part of the *Yalqut* has survived. Therefore it is not possible to know whether the change occurred during the printing of the Yalqut, or before, perhaps already by its author.

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Palestinian Talmud, the Babylonian Talmud, and the fragment from “Torat Eretz Yisra’el”.  

4. A similar version is cited in the ‘Arukh: אמר ר’ יוחנן מנאן זוגות זוגות קונטרס (קונטרס סימא קנטור מזווית) which is simply a corruption of the word for a measurement of weight and for the Greek coin קנטוריס. The inclusion by Alexander Kohut of the entry קונטרס in Nathan ben Yeḥi’el’s dictionary He-’Arukh, in his edition of the Aruch Completum (appearing after the entry קנטוריס), seems to be artificial: the entry appears in only two late manuscripts in the entire manuscript corpus that Kohut worked from, while in other manuscripts the entry is given (in variant form) under the previous entry קנסר. The entry is also missing from the manuscript added by Samuel Krauss in his important addenda to Kohut’s Aruch Completum. However, a casual examination shows that indeed, the version appearing in Aruch Completum already appears in one of the earliest manuscripts of the He-’Arukh (and perhaps the earliest one), which was written in Italy, perhaps already during the author’s lifetime. Nathan ben Yeḥi’el therefore devoted a separate entry to the word קונטרס (קנטרס) in his dictionary, but this was no more than a variant version of the term denoting the Greek coin mentioned in the talmudic literature.

[b]

What is the etymology of קונטרס? קונטרס is of course a foreign loanword borrowed by Rashi or an earlier sage, presumably in Northern France or in Rhineland. The notion that the term קונטרס as a reference to Rashi’s commentary (and the Tosaphists’ use of this term in reference to Rashi’s commentary) derives from the Latin word commentaries (commentary), ‘with a missing letter’ – an etymology proposed by

25 Aruch Completum, ed. A. Kohut, Vienna 1892, p. 135. In the alternate version (וספורטיא) of Rashi’s commentary for the end of the tractate, which was printed in the Vilna edition, the word appears with the spelling קנטוריס.
26 D. Sperber, Roman Palestine 200–400: Money and Prices, Ramat-Gan 1991, pp. 166, 265 (note 16). Cf. Sokoloff, above in the appendix, n. 22, under the entry קנטוריס, קנטור, קנטר, קנטר, קנטר (שפנה ממאש) belong to the previous entry קנסר (see Aruch Completum, ibid.)
27 Indeed, Binyamin Mussafia argued that the entry and the interpretation of the word it contained (קנתריס) belong to the previous entry קנסר (see Aruch Completum, ibid.)
29 MS London Add. 26881 (Margaliouth Catalogue 957), fol. 349v, entry קנטריס.
30 This may attest to the fact that the codicological term was already in use in Italy at the time of Natan ben Yeḥi’el (who must have composed his dictionary in the last third of the 11th century in Rome), because otherwise the talmudic word might not have changed as it did according to this version.
Binyamin Mussafia, which was supported and reinforced by Alexander Kohut—of course, baseless. Elijah Levi Baḥur, who already knew how to explain the source of the use of this word by the Tosaphists, indicated its etymological meaning in his dictionary HaTishbi, s.v. קונטרס:

Elijah Levita Baḥur’s explanation, which contains in a nutshell the chief part of our argument, is fully elucidated by reference to the Latin translation in the bilingual edition of his dictionary. According to him, the term is a loanword from Italian, in which a קונטרס is called quinterno, deriving from the word for five, because quires are customarily constructed from five ‘leaves’ (bifolia) and since each ‘leaf’ comprises two folios, each quire contains ten folios. But Elijah Baḥur also adds that sometimes quires were constructed of four bifolia (eight folios), a composition called quaterno.

Indeed, Elijah Bahur’s account is almost entirely accurate. The source of the word is of course in medieval Latin and not in Italian, which derived the term from the more antique language. Initially, early medieval Latin did not have a generic word for a codex’s quires; quires were named according to the number of bifolia from which they were constructed. In classical Latin, the plural quaterni was used to denote anything clustered in fours, and already in the period of the Church Fathers, the word quaternion came to be used more frequently to describe quires of four bifolia, and eventually this became the quaternus. The same applies to other compositions, especially the quinio which became quinternus. However, from the end of the thirteenth century the word quaternus (which, as noted, signified a four-bifolia quire)

31 Aruch Completum 7, (above in the appendix, n. 25), entry קמנטריס, pp. 121-122.

32 Isny 1541, without indication of pages. (p. 209 in the bilingual edition, which was published alongside the Hebrew edition, Isny 1541).

33 It is mistakenly noted there that each one of them contained שני עלין. In the bilingual edition, the terms עלים and דפים, were erroneously translated as ‘pages’ by the Latin translator Paul Fabius (ibid., p. 210).
came to be used as a generic term for quire, regardless of the number of bifolia comprising it.\textsuperscript{34} It would appear that this is the word underlying the term for quire in French (cahier) and in English.

Elijah Baḥur correctly observes that the source of the term in Hebrew sources is the non-Hebrew term for a five-bifolium quire,\textsuperscript{35} however, he innocently surmised that the non-Hebrew source was the Italian quinterno (which is almost identical to the Latin word quinternus). Although the Ashkenazic sage knew that there were four-bifolia quires, as he noted in his dictionary, his long-term residence in Italy, where five-bifolia quires were the standard since the time of the earliest dated manuscripts, apparently coloured his perception of the matter.

The source of the codicological-bibliographic term קונטרס, which began to be used in Hebrew in Germany at the very latest during Rashi’s lifetime, is hereby elucidated in the linguistic sense; however, the etymological explanation, which cannot be in doubt, presents a codicological problem, which might lead to important insights in regard to the history of European book craft generally and Hebrew book craft in particular. If the source of the word is quinternus, and its meaning is a five-bifolium quire (in late Latin), as appears to be the case, the Hebrew term should reflect the method of quiring that was customary in the region and in the time period in which the word was borrowed. If so, the adoption of the word in this form attests to the fact that in the region of Champagne in northern France, where Rashi was born and where most of his literary activity took place, or in the Rhineland, where he studied, and which was the centre of study of Ashkenazi Jewry in the final third of the eleventh century, or even prior to that, books were composed of five-bifolium (ten folios) quires. But the composition that was commonly used, almost without exception in all the early


\textsuperscript{35} This was already noted by Z. Ben-Hayyim, Literary and oral tradition of Hebrew and Aramaic amongst the Samaritans, Part 1, Jerusalem, 1957, p. 99 (in Hebrew). See also The comments by Krauss in his dictionary (above, in the appendix, n. 28), where he rejects Elijah Levita (Baḥur)’s etymology. In MS Oxford MS. Mich. 188 (Neubauer Catalogue 2105/1), written in Italy circa 1500, the copyists noted in the margins of fol. 55r: רבד המודר תאמריל הקויונטסינ (the quire does not in fact begin there, and presumably he intended the model from which he was copying). EQUIIUS. i.e. four-folio quires (quaterni) are mentioned a few times in lists of manuscripts deposited in the hands of Azriel ben Binyamin Nethaniel by his grandfather Yosef Yitsḥaq in Italy in 1482/3. The list appears in MS Oxford MS. Laud. Or. 101 (Neubauer Catalogue 240), fol. 303v.
Hebrew manuscripts produced in Ashkenaz – in Germany as well as in France, was of quaternions (four-bifoliium)! Indeed, we do not possess dated Ashkenazic manuscripts that predate the final quarter of the twelfth century, but even if we do not rely on the undated manuscripts which to our estimation were written earlier and also contain quaternion quires, it is hard to imagine that a technical custom, which was so prevalent from the end of the twelfth century, was not entrenched prior to that.

This codicological puzzle is enhanced when we consider the quiring practice in Latin bookmaking, which must be reflected in the Latin loanword that appears in the Hebrew source. But here we discover that unlike the Hebrew manuscripts from France and Germany, the early quaternion composition in the European continent, already from the early Middle Ages was not standard, and it was in competition with the senion composition, but in any event quaternion quiring is not at all in evidence there.

What can be deduced from this contradiction between language and reality? Can we resolve the contradiction by presuming that the quaternion composition that clearly dominated Ashkenazic Hebrew manuscripts from the final quarter of the twelfth century, was not practiced there in prior eras, but was preceded by a quinion composition that was prevalent until the end of the eleventh century at least? Were there indeed Hebrew books in the early German lands and in France that were produced with quinion quiring, as in Italy – a practice that vanished without trace and which was replaced before the final quarter of the twelfth century by the quaternion compositions? Did the immigration of the family of Kalonimus of Luca to Mainz in the beginning of the tenth century, an event whose historical veracity and crucial influence on the development of spiritual life in Germany has recently been verified and clarified, also import the quionion quire structure of Italy to Ashkenaz? Or should we deduce from this contradiction that the innovator of the Hebrew terms was not Rashi or one of the Mainz or Worms sages who preceded him, and that the word was not coined in France or Germany, but rather in the regions where quinion quires were actually prevalent, i.e. Italy, as noted, and the Oriental lands, even though to the best of my knowledge we possess no documentation of this?

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36 This is the case in the vast majority of parchment manuscripts produced in Ashkenaz before the end of the Middle Ages, and cf. the discussion above in the main part of the chapter.


38 See above in the main part of the chapter. And see above in n. 30 on the possibility that the term was already known in Italy in the 11th century, and if so, it was perhaps imported to Ashkenaz from Italy.
The possibility that the soil from which the term קונטרס sprouted was in the Orient is utterly untenable. It appears that in documents from the Orient (and Byzantium), a slightly different term is consistently used, and what’s more, it too appears to fly in the face of the codicological reality.

It is remarkable that all of the sources from the Orient and Byzantium at our disposal – colophons, letters, and indications of ownership, consistently use the term קוטרס (קוטראס, קוטראסה) instead of קונטרס or in plural form קוטרסים (קוטראסים, קוטראסין).

1. The earliest documentation I have found to date for this spelling is from a letter by the copyist Solomon ben Yosef HaCohen of Dalton (near Safed) to a Hillel of Tiberias who commissioned book copies, which according to the scholar who prepared an edition of the letter, Simḥa Assaf, was written between 1020 and 1050: והביא השליח שני כתבים... бан י קוטריסין שי שכר כתי-בתם סי ביני ובינך וגו קוטרסין בשתי קירטר. If this would seem to be nothing more than an elision of a letter (nun), despite the two occurrences in the text, other Oriental sources prove that this is the actual form of the word.

2. An indication of ownership recorded before 1094, apparently in Tyre, in a fragment of a manuscript of Tractate Avot that survived in the Geniza, MS Cambridge T–S E3.75/1-8 (the manuscript itself was written in 1066, apparently near Tyre):

3. In a colophon heading a quire of piyyutim from the Geniza, MS Cambridge T–S 10K 18.6, written in Fustat before 1096: הכותרס לעבדהיה הכהן מיר' יצחק ס"ט בן יפתח תנצב"ה ארור גונבה. The copyist is the son of the famous Nahryben Nissim, who died in 1096, and because he mentions his father’s name in the blessings for the living, it is clear that the colophon was written prior to that year.

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40 See above, chapter 1, n. 169.
41 This owner copied a manuscript for his own use in Tyre in 1094 (MS Cambridge T–S Arabic 51.13), and because he noted his father’s name in the blessings for the dead in his colophon, this inscription of ownership, in which his father is mentioned in the blessings for the living, was written before 1094.
43 On the son, see Goitein, Mediterranean Society, vol. 1, p. 326, 598 (n. 71).
4. In a colophon of a manuscript written in 1199 in Alexandria, of which only the colophon has survived in the Geniza, MS Cambridge T–S 145.12: [שהלמה] ו[שלמה מבית חננאל] [ם]כ[-]קטורהמש [תשתנו] בדpository אוסף [א] grundlagen [החבר].

5. In a letter from the Geniza, MS Cambridge UL T–S 12.394, a fragment of which was published by Alexander Sheiber\(^44\) and discussed at around the same time by S.D. Goitein: \(^45\) Goitein believes that the sender of the letter was a ‘bibliophile from Byzantium’, and tended to identify the addressee with the Sicilian copyist who had made his way to Egypt in 1154 and settled there. However, the semi-cursive script of the letter is entirely Oriental. It is therefore clear that the writer of the letter (and not necessarily the author) reflects an Oriental linguistic tradition in his writing.

Indeed, it appears that the form קוטרס was customary in Byzantium:

6. In a letter from Byzantium, MS Cambridge UL T–S 20.45, which Mann dated to the eleventh century,\(^47\) a dating that also accords with the Byzantine script of the letter: \(\text{הי לא י קוטרסיס... הי לא י קוטרסיס כותבים בסלחות... עליל תר קוטרסיס כותבים כל השמות הדוהים.}\)\(^48\)

7. In part of a letter written by an anonymous proselyte to the heads of the Jewish community, published by Simha Assaf,\(^49\) it is written: \(\text{ונכתבתי י קוטרסים ורדתי בתם סאהתי ותתי להמר חכם קוטרסיס וכתבתי היה מקוריס גותים...</}\)\(^50\) The identity of this proselyte has not been clarified to this day,\(^51\) but the writing indicates a Byzantine script that is apparently earlier than the eleventh century.

\(44\) The feminine form and the spelling with an aleph are probably influenced by the Arabic term כראסה which has a close meaning (leaflet, quire). Compare the use of the following term in Hebrew script in an inscription of large hollow letter at the beginning of a Geniza fragment of piyyutim, apparently from the 13\(^{th}\) century [שהלמה מהד תשתנו] בדpository אוסף [א] grundlagen [החבר] (MS Cambridge T–S K6.65)\(^52\).


\(46\) Mediterranean Society, vol. 2, p. 403, 574 (n. 47).

\(47\) J. Mann, Texts and Studies in Jewish History and Literature, vol. 1, Cincinnati 1931, pp. 45–47.

\(48\) The text copied here is from the microfilm stored in the Institute for Microfilmed Hebrew Manuscripts at the National Library of Israel in Jerusalem. Mann (ibid) unwittingly miscopied קוטרסיס (twice).

\(49\) The publication of the letter (MS Cambridge T–S 12.732 was anthologized in his book Texts and Studies (above, chapter 1, n. 169), p. 149. Assaf noticed this spelling of the word both in this letter and in a letter by the scribe from Dalton that he published (above in example no. 1).

\(50\) This is the only example of the vocalisation of the term among all the documentations I found both in the Orient and the Occident.

\(51\) See the discussion by Nahum Golb, who does not decide the matter, but implies that the dating of the letter is toward the end of the 11\(^{th}\) century: N. Golb, ‘Notes on the Conversion of European Christians to Judaism in the Eleventh Century’, JJS, 16 (1965), pp. 70–74. And cf. ibid. (between pages 74 and 74) a photograph of the document.
Add to these early witnesses from Byzantium the similar versions of the same Byzantine manuscripts of Rashi’s commentary, mentioned in part [a] of this appendix, at the end of the discussion of source [a] and source [d], and it becomes clear that we have an entrenched tradition that persisted until the late Middle Ages.

The findings I have collected indicate, therefore, a spatial distribution of the form of the foreign word borrowed into Hebrew in order to denote the basic building block of the codex, i.e. a sort of notebook constructed of several folded bifolia. In the West the form was קונטרס (in Spain, apparently, the pronouncing spelling קונדרס was used), in the Orient and in Byzantium קוטריס.²² Ostensibly, a trivial difference, but its consistency both in the Occident and in the Orient demonstrates that two different linguistic traditions and etymological sources are in question. To the best of our current knowledge, both terms are documented in sources from roughly the same time period – the eleventh century, and according to sources of unquestionable date – from the end of the eleventh century.

What’s more astonishing is that the apparent etymological meaning of the form in the Oriental-Byzantine texts contradicts the codicological reality in the Oriental zones,

²² The only exception to this distribution, which violates the geographical division, appears in a long book list, rare in its scope and antiquity in Europe, written apparently by an Italian copyist as early as the 12th century in an empty page at the beginning of MS London Add. 27169 (Margaliouth Catalogue 340), which includes a copy of the midrashic compilations of Genesis Rabba and Leviticus Rabba. The body of the manuscript was apparently written in Italy around 1090/1, since its second scribe, who copied the vast majority of the manuscript, is undoubtedly the hand that wrote folios. 7r-12r in MS London Add. 27214 ((Margaliouth Catalogue 950), which was copied in 1090/91, and includes Maḥberet Menahem and Dunash ben Labrat’s critiques of the Maḥberet and of Saadiah Gaon. In this list the word קוטריסים appears five times! Because of the importance and rareness of this list, I present it here without discussion and with minimal notes:

In the list of this impressive library (or rather, judging by the duplicate titles) a bookdealer inventory), holding almost forty works, the characterization of ‘a script of an Ishmaelite land’ (as well as the ability to distinguish it as such) stands out. Our knowledge of the types of books and scripts in Italy in the early periods is too meagre to allow us to unhesitatingly suggest the possibility that the list was written in southern Italy, in an area in which presumably some degree of the Byzantine heritage of its inhabitants continued to be preserved, and perhaps also its linguistic traditions, as were preserved within Christian society.
just as is the case in Ashkenaz and the European lands in general (except for Byzantium), but in a converse manner. Just as the European form קונטרס reflected the term quinternus, a five bifolia quire in medieval Latin, thus the form קוטרס apparently reflects the codicological term quaternus, a four bifolia quire in the medieval Latin, which, as will be recalled, eventually became a general term for any quire. And just as in Germany and in France the quaternion (four bifolia) quire was commonly used in the extant Hebrew codices in these regions, the standard composition of the Hebrew and Arabic manuscripts in the Oriental zones was the quinion,\(^53\) unlike the practice apparently reflected in the terminology used in the Oriental sources.

However, before we attempt to reconcile the codicological contradiction in the Orient, we must emphasize that the etymology suggested for קוטרס by analogy to the term קונטרס is beset by a basic difficulty, even without the codicological contradiction: is it possible that a European Latin term would be adopted in the Oriental Muslim lands? The possibility that the term came from Byzantium (in which quaternion quires were indeed used) and then travelled eastwards, is of course, not more likely, for in that case we would expect the loanword to derive from Greek and not Latin.\(^54\)

It stands to reason that when Jews in the Orient in the eleventh century or earlier, after the late adoption of the codex form in wake of the Arab conquest, wished to borrow a codicological form to denote a quire, they would not borrow such a term from the Latin but more naturally from the Arabic, their scientific language, just as in an earlier period, during the time of Rabbi Yehudai Gaon, they borrowed the term מפרש,\(^55\) and sometimes מרין, to signify a codex. And yet, the term used for quire in Arabic is כראס,\(^56\) undoubtedly a loanword form the Syriac, which used the word כראסא,\(^57\) and which certainly does not underlie the Hebrew term קוטרס.

\(^{53}\) See above in the main part of the chapter.

\(^{54}\) The Greek terms are also based on the number of bifolia, and the most common term was based on four τετράων or τετράοδιον. See E.M. Thompson, An introduction to Greek and Latin palaeography, Oxford 1912, p. 61.

\(^{55}\) See J. Sadan, ‘The world of clerks, officers, and scribes’, Alei Sefer, 2 (1976), p. 42, n. 60 (in Hebrew). The same holds for most book lists in Judaean-Arabic. See the lists of Yosef Rosh HaSeder in Allony, Jewish Library, e.g. list no. 98, p. 350, lines 103, 108, 114, 117, 127 (כפראסי in plural), line 122 (כפראס) and cf. above, in the appendix, n. 44. For another Arabic term used in Judaean-Arabic literature כראס, which some have incorrectly interpreted (see above, in the main part of the chapter, n. 1) but which means a quire that accumulates bifolia over time see M.A. Friedman, ‘Masa u-matan bein hakham mi-Teiman le-R. Avraham ben haRaMBaM ‘al kesef haketurba ve-‘al samkhut hamassoret’, Teuda, 14 (1998), p. 47, n. 27 (in Hebrew).

It appears that the only word that can be hesitantly offered as a codicological etymology of the word קרטאס, deriving from the Arabic, is קרטאס (‘qartas’), which entered Arabic from Greek by way of Aramaic and Syriac and sometimes was vocalised with a u in the first syllable. If we presume that the Hebrew loanword metathesized, we find a word that is indeed etymologically identical. However, the diverse codicological meanings of the Arabic word never include the meaning of a quire. The word denoted the writing material in its raw form, first as a papyrus or papyrus rolls (from which bifolia were cut), a parchment or parchment sheet, and eventually, paper or a bifolium of paper. And even though the expanded meaning of the word also referred to the product made from the writing material, i.e. a scroll or a book, it did not signify a quire.

Therefore, if our word is not a metathesized loan of the Arabic word קרטאס, is it possible that, despite all the historical and philological difficulties, the source of the word קרטאס in the Orient and in Byzantium is nevertheless the Latin word quaternus, a four-folio quire, which, as noted, was already in use in the Continental Latin manuscripts from the early Middle Ages, and that the term travelled to the Arab Orient (or to Greek Byzantium) and was there adopted by Hebrew scribes? Or should we simply assume that indeed, in the Orient too, the Latin word quaternus wound up being used as a fitting term for the five-bifolium quinion quires used there, and that according to phonetic patterns in Semitic languages the nun assimilated to the following consonant?

The riddle regarding the source of the Oriental term has not yet been solved, it seems. As for the source of the European term, I tend to accept a premise that resolves all the difficulties and contradictions – both philological and codicological: the origin of the term קרטאס was in Italy, in a region in which the Hebrew manuscripts were constructed of quinion quires already from the eleventh century at the latest, and the term was imported to Germany and then to France, perhaps even by the Kalonimus family itself in the early tenth century. The double use of the word in Rashi’s

58 Cf. the discussion above in n. 44 of the appendix.
60 See the studies by Grohmann, From the World of Arabic Papyri (above, chapter 3, n. 56), pp. 22-23; Arabische Paläographie (above, chapter 3, n. 12), vol. I, according to the index (numerous occurrences). See also G.A. Rendsburg, ‘The Etymology of χάρτης ‘Papyrus Roll’’, Scripta Classica Israelica, 36 (2017), pp. 149-169
61 See Lane’s lexicon, (above, in the appendix, n. 59), ibid.
62 As suggested to me by Michael Sokoloff.
terminology – both in the basic sense of a physical-codicological unit, and in its expanded bibliographic sense (a book, treatise) may indeed provide evidence that the term was already in use for a long time, during which it widened its reference.
Chapter 5: Marking the sequence of quires, bifolia, or folios in the codex

The codex is build up from a series of quires constructed from multiple folded bifolia. Such a complex construction requires a means of ensuring the correct order of the quires and of the bifolia, and of marking their sequence after copying, and all the more so during the copying process. This was required also in those Latin manuscripts, which were copied, so it seems, on parchment or paper sheets that were folded after being inscribed to form the bifolia of a quire; for only subsequent to the copying and during the binding process were the folds connecting their bifolia (or leaves) cut at the upper, outer, and lower margins, and at any rate, copying by the method of imposition\(^1\) would not have guaranteed the correct order of the quires. Even the temporary stitching of quires for the purpose of copying\(^2\) did not relieve the copyists from the need to ensure the correct order of the codex’s quires before binding, as well as the correct internal order of a quire’s bifolia upon its rebinding. And yet, the temporary stitching and its eventual disappearance may explain the development of the means for ensuring the order, which began with the marking of a sequence of quires only, to which was later added the marking of the bifolia’s sequences within the quire and even of folios, as Peter Gumbert has proposed. The means for ensuring the order of the codex that were in practice in Hebrew manuscripts, their frequency, and location in the quire may provide an indication of the methods of construction of the quires and of the copying units. Were quires indeed constructed by folding sheets that had been inscribed by the copyist prior to folding them to produce bifolia (with such manuscripts therefore only containing a means for ensuring the order of quires), or were separate bifolia prepared initially, later to be copied in their folios correct order in the quire (with such manuscripts therefore featuring a means for ensuring the order of bifolia)? This question has not been sufficiently researched in Hebrew codicology, but the preponderance of odd quire constructions makes it difficult to accept this possibility (cf. discussion above in chapter 4).

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1 See above, chapter 4, the text referenced by note 1 and in the note.
2 As already assumed by Gregory in the late 19th century; Gullick discovered such stitching in 12th century English and French manuscripts (and Gumbert expanded the provenance of its findings in the Occident and Orient as well as the period of its use). See, ibid. n. 14.
Recently a new highly detailed system of notation has been proposed (with a full suite of lettered symbols, numbers, and abbreviations) for formalising the description of the methods of ensuring the order of the codex and of its components in Occidental manuscripts.\(^3\) The various types of methods used in Hebrew manuscripts will be presented below, and described in verbal terms.\(^4\)

The means employed by Jewish copyists to ensure the correct binding of the codex can be classified into two main groups: methods based on a catchwords deriving from the copied text,\(^5\) (see in greater detail below in section 1), and methods based on numbering added to the text at its material divisions (more on which see below in section 2). Both methods were implemented at the codicological dividing points of the book’s structure – initially only at the transition from one quire to the next, and eventually also in transitions between bifolia and even between the manuscript’s folios, although these are not independent codicological units. In all zones both methods were used, usually simultaneously in the same manuscript, but in Ashkenaz the signature methods were extremely rare, and even in Byzantium they were scarcely used. Generally, the methods used to ensure the order of the codex in paper manuscripts were different from those used in parchment manuscripts, except in the Middle East, where paper replaced parchment as the standard writing material already in the beginning of the eleventh century. In the other zones, where paper spread only much later, paper was presumably seen as more vulnerable than parchment and its folios more likely to be separated from their pairings and to become detached from their quires, and therefore copyists were not content only to preserve the order of the quires, like most copyists of parchment manuscripts, but added means to ensure the

\(^3\) P. Andrist, ‘Formule de description des signatures, réclames et autres marques de cahiers dans les catalogues de manuscrits anciens’, *Gazette du livre médiéval*, 44 (2004), pp. 25–38. For a categorized description of methods for ensuring the order of the codex in Humanist parchment manuscripts, including a description of the precise location of the markings used for this purpose, see Derolez, *Codicologie*, vol. 1, pp. 40-64.


\(^5\) An unusual method of using graphic markings instead of catchwords was employed in an undated 15th century manuscript in an Ashkenazic script (MS New York L873). A number of forms were marked at the bottom of each verso page and were repeated on the following recto pages.
order of bifolia or folios. It can be hence inferred that these means spread in those areas in later periods.

Elucidation of these methods has clear typological but also chronological value. The prevalence of each type may help us date a manuscript and to some degree also identify its provenance. What’s more: understanding these methods provides a vital key to uncovering the structure of the quires when it is not visible, especially in paper manuscripts, and to reconstructing the folios, the bifolia, and even the missing quires of a codex.

Latin codicology attests that the signature method predates the catchword method, which began to be used in the ninth century, and the study of early Greek codices reveals that the signature method had appeared already in the early era of the Greek (and Latin) codex, while the catchword method appears regularly on Greek manuscripts only in the period of the Byzantine Renaissance. In all of the early Hebrew dated known manuscripts which were manufactured in the tenth century,

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6 This explanation for the proliferation of means of ensuring the order of bifolia in the more vulnerable paper codices can be contested: without temporary stitches the order of parchment bifolium copyings could be also easily disrupted during the copying process. The development of means for ensuring the order of the codex, until they came to be implemented on every single folio – even on every single page – was presumably not only precipitated by the transition to writing on paper but was also (and perhaps primarily) due to the relatively late development of indexing and inscription of a table of contents in Hebrew books, and naturally these required a precise marking of text locations. Probably the earliest evidence for the inscription of a table of contents appears in the prologue of Rabbi Eliezer ben Natan (one of the early Tosaphists from Germany, deceased 1170) to his work Even ha’ezero: אזכרו ספר הזה אבן העזר [...] ואתברישו איש的颜色 באישון ונקרא ארץ (Simcha Emmanuel, personal communication). Another important reference is the hierarchical detailing of the names of the chapters (halakhot) in each book of Maimonides’ Mishne Tora.


8 The numbering of quires and other numberings were integrated already at the initial spread of the Greek and Latin codex. According to Turner (Early Codex, p. 77) the earliest known numbering of quires is from the Bodma II papyrus, from the first half of the 3rd century (where foliation was also added by the copyist). Saenger, (Space Between Words, pp. 77-82), concentrated Turner’s and others’ data on the numbering of folios and pages in Greek and Latin codices and scrolls, and concluded that systematic foliation appears in Latin manuscripts only after 1200 (see below on the distribution of foliation in Hebrew manuscripts).

9 J. Irigoien, ‘Typologie et description codicologique des manuscrits de papier’ (above, ch.3, note 133), pp. 297–298. Prior to this, quire catchwords appeared sporadically in the 13th century. During the middle ages catchwords were not used in Syriac codices, but they include quire signatures since the 6th century. See F. Briquel-Chatonnet, ‘Cahiers et signatures dans les manuscrits syriaques’ (above ch.4, note 20). The data on Syriac manuscripts are derived chiefly from the collections in the Bibliothèque Nationale de France in Paris and the British Library in London.
there are no means for ensuring the order of the quires.\textsuperscript{10} The first dated manuscript in which such means survive is from the beginning of the eleventh century, where the two methods coexist.\textsuperscript{11} However, it merits consideration that both methods for ensuring the continuity of the text across its material divisions were known to Hebrew scribes from antiquity. The use of catchwords for connecting scrolls in the early phases of the composition of biblical books is proven by the first two and a half verses from the beginning of the Book of Ezra and Nehemiah, which are doubled in the Massoretic version at the end of the Book of Chronicles; it is not the case, as was commonly thought since Zunz’s time, that the last two and a half verses of Chronicles were doubled at the head of the Book of Ezra and Nehemiah. Menahem Haran, who agrees with the reigning view that the two books – Chronicles and the Book of Ezra and Nehemiah – were once a single textual unit, believes that it was the substantial length of the Book of Chronicles that prevented it from being copied to its full extent in one continuous scroll and therefore the part consisting of the Book of Ezra was written on a separate scroll, and the catchwords were written at the end of Chronicles.\textsuperscript{12} The use of sheet signatures in scrolls is clearly evidenced in the remnant

\textsuperscript{10} A few fragments of quire signatures at the head of a quire have been found in the earliest dated Hebrew codex, produced in 894/5 (see \textit{Codices hebraicis}, Part I, ms. 1). However, doubts regarding the reliability of its dating have been confirmed by Carbon 14 testing which has indeed established that the manuscript was produced around one hundred years later (see, \textit{ibid.}), in other words, in a period when means for ensuring the order of the codex began to be used. One cannot entirely rule out the possibility that the means for ensuring the sequence of the quires inscribed at the upper or lower margins, as we shall see below, were cut out during repeated rebinding, but their absence from all the dated codices from the 10\textsuperscript{th} century, even the well preserved ones, casts doubt on this possibility. The very fact that all the remains of dated books from the 10\textsuperscript{th} century are biblical books may indicate that this absence stems from the scribes’ reluctance, during the early era of the Hebrew codex, to add anything to the biblical text. Indeed, quires in Arabic Qur’an manuscripts from the early period were never numbered! See M.-G. Guesdon, ‘Les réclames dans les manuscrits arabes datés antérieurs à 1450’, in Déroche & Richard (eds.), \textit{Scribes et manuscrits du Moyen-Orient}, pp. 66-75; idem, ‘Systems to Indicate the Order of Folios’, subchapter in: Déroche, \textit{Islamic Codicology}, p. 91; and also idem, ‘La numération des cahiers et la foliotation dans les manuscrits arabes datés jusqu’à 1450’, in La tradition manuscrite en écriture arabe , ed. G. Humbert (\textit{Revue des Mondes Musulmans et de la Méditerranée}, 99-100 [2002]), pp. 101–115. In a personal communication François Déroche informed me that Qur’anic quires were not numbered by signatures before the 15th century.

\textsuperscript{11} MS St. Petersburg Exp.-Apaß. I 4520, written in Fustat in 1006 (\textit{Codices hebraicis}, Part I, ms. 16), which is the earliest extant paper codex – albeit a damaged one – which is not a small fragment. It should be noted that quire catchwords were found in the biblical manuscript which was written in Kairouan (Tunisia) and was likely to have been written in the 10\textsuperscript{th} century – its damaged date does not allow us to tell what year it as written but it was clearly between 941 and 1039 (see \textit{Codices hebraicis}, Part II, ms. 29).

\textsuperscript{12} See M. Haran, ‘Catch-Lines in Ancient Palaeography and in the biblical Canon’, Eretz-Israel: Archaeological, Historical and Geographical Studies, 18 (Nahman Avigad Volume), pp. 124-129 and esp. 126-127 (in Hebrew), and cf. \textit{ibid.} also references to the literature on catch-lines in clay tablets from Mesopotamia. But also see S. Japhet’s study ‘Ha’am ḥibber ba’al divrei-hayamim et sefer Ezra-Nehemia?’ (M.A. Thesis, Hebrew University of Jerusalem, 1965), which confirms the view, based on linguistic and ideological criteria, that the two works were not authored by the same person. It is
of signatures in fragments of one of the Dead Sea Scrolls.\textsuperscript{13} Means for ensuring the order of quires have been found in non-biblical manuscripts, which although undated may have been written before the eleventh century, because their antiquity is indicated in the script, in their material and scribal traits, and also in the configuration of the text.\textsuperscript{14}

The corpus of dated manuscripts written before 1500 and documented by the Hebrew Palaeography Project, in which means of ensuring the correct order of the codex have survived, serves as the basis for the ensuing discussion about the classification of these means. The various data cited in the discussion are derived from this corpus, unless otherwise noted. Sometimes findings are cited also from undated manuscripts.

\subsection*{1. Catchwords and counter-catchwords}

Catchword methods fall into two types – the main and more ancient method, and its subtypes will be called in brief the catchword method\textsuperscript{15} (quire, sheet, and bifolium catchwords), and the secondary method, which is merely a variation of the catchword method will be called the counter-catchword method. Both methods are based on the repetition of a word or several words from the copied text in the transition from quire to quire or from bifolium to bifolium of from folio to folio, without adding anything to the text to mark the sequence of the quires, or bifolia, or folios.

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\textsuperscript{13} J.T. Milik, ‘Numération des feuilles des rouleaux dans le scriptorium de Qumrân’, \textit{Semitica}, 27 (1977), pp. 75–81, Pls. X–XI. On the number of sheets of the first nine sheets of an Italian Tora scroll written in 1091/2 (whose scribe also added sheet catchwords at the end of all the sheets), see below, chapter 7, n. 31.

\textsuperscript{14} E.g. the manuscripts of the Sifra in Babylonian vocalisation kept in the Vatican Library (Vat. ebr. 66) or the manuscript of Bereshit Raba in the same collection (Vat. ebr. 30) – both use quire catchwords.

\textsuperscript{15} The Hebrew term – שומרים was coined after the Latin custodes. In English – catchwords; in French – réclames, in Italian – richiami; in Arabic ta’aqib (from the root meaning ‘to follow’, a term that suits Hebrew as well). See the study by Muhammad Jamil, ‘Islamic Wirāqah’ (above, chapter 3, n. 58), p. 33, and cf. Gacek, \textit{Vademecum}, p. 51, which also cites other terms. Suzanna Wijsman has pointed out to me that musical notes written in the Middle Ages, since the 11\textsuperscript{th} century, used a form of catchline at the end of lines – notes anticipating the following notes (custos in Latin), which were meant to facilitate the fluid reading of notes.
In the catchword method, the first word(s) of a quire, a bifolium, or a folio, is written at the end of the preceding quire/bifolium/folio, usually next to the vertical margin that forms the left boundary of the written area.

The quire catchword – a preview of the continuation of the copied text in the following quire – provides an outstanding means for ensuring the correct order of quires by employing the text itself to concatenate its sequential parts. As it is inscribed outside the page’s written area it also clearly marks the end of the quire.

Already at the beginning of the twelfth century the use of the secondary catchword method emerged – counter- catchwords. This method also uses the repeating of words from the copied text at the transition from one quire, bifolium, or folio to the next. However, the catchword stratagem involved writing the first word(s) of the quire at the bottom of the last page of the preceding quire, while the counter-catchword stratagem involved the repeating of the last word of a quire at the beginning of the first line of the following quire (or bifolium or folio). This method, which never became popular, (although eventually it became widespread as a substitute for bifolium and folio catchwords) presumably sought to avoid adding anything to the copied text but also wished to camouflage the means of ensuring the sequence of the quires (and eventually of bifolia and folios) and assimilate it into the written space.
This assimilation seems to have presented difficulties for the reader, who was liable not to fathom the reason for doubling the word, and this uncommon method might have been a stumbling block for copyists who were not familiar with it, causing various types of dittographies while copying from models that used such practice.

The various types of catchword method were the main methods in use in all zones except for the Middle East, where the signature method was preferred during the early centuries of codex production. Because copyists tended to use both catchword systems described above in many manuscripts, the overall distribution of their use comprehended almost all of the manuscripts in the corpus under discussion (88 percent) – the quire and bifolium catchwords exist in 60 percent of them, folio catchwords exist in almost half of them, and only 14 percent of them contain the counter-catchword variation. A third of the manuscripts in which folio catchwords were marked at the end of quires also (identifiable as such according to the characteristic placement and shape of folio catchwords) did not contain quire catchwords. Sometimes, in order to ensure the sequence of folios, the copyists mixed both methods – catchwords and counter-catchwords.

A. Catchwords

Catchwords were written at the foot of the page, and therefore many and sometimes all were lost when the margins of the page were trimmed when a manuscript whose binding had become worn over was rebound. Usually the catchword was written horizontally near the left margin vertical ruling line, almost always in the same script and size of the body text. In the Orient, from the end of the twelfth century\textsuperscript{16}, the custom of writing catchwords diagonally became widespread, as part of many copyists’ tendency to write the final words of a line that were expected to exceed the margin in this manner (see below, chapter 7, line management). This custom appears in almost two thirds of the dated Oriental manuscripts with catchwords of all types (in Yemen it is less frequent), and it was undoubtedly influenced by the line management of Arabic manuscripts and its tradition of applying means for ensuring the sequence of codices.

Sometimes quire or leaf catchwords were written in the middle of the bottom margin. The earliest extant instance of a quire catchword in this position is in an Ashkenazic

\textsuperscript{16} The earliest manuscript with diagonal catchwords is from 1190 (\textit{Codices hebraicis}, Part IV, ms. 86).
manuscript, apparently from France, from 1215/6, but it was preceded by manuscripts in which the catchwords were written in the lower margin close to the middle or in the middle of the second column, in manuscripts that were copied in two columns. This location of the catchword is also evidenced in later periods. Catchwords that were written in the middle of the margins were not characteristic of any particular region, their distribution was limited, and in the Middle East they are not evidenced at all. In a few dozen manuscripts quire catchwords were written vertically, and in a small number of manuscripts folio catchwords were written in this manner. The only region in which this form was relatively prevalent is Ashkenaz (German lands and France) where it appears in 15 percent of the manuscripts written there that include quire catchwords. Not long after the use of catchwords began in the Orient in the eleventh century, they began to be decorated, usually simply, in order to make them stand out (signatures were similarly decorated), but sometimes the catchwords were ornamented with more complex designs. In Europe, especially in the Ashkenazic zone and slightly more so in Byzantium, quire catchwords (usually only some of them) were occasionally decorated by the copyist with pen drawings and sometimes with Masora micrography rendered by the Masorete-vocaliser. In Germany and France, where 15 percent of manuscripts containing decorated quire catchwords, the quality of the drawings – particularly those of fauna – was generally skilled. In Byzantium, in which the rate of such manuscripts is 13 percent, the drawings of fowl are much more unschooled, and they resemble the drawings of fowl in non-Hebrew Byzantine manuscripts from the provinces.

When a catchword was inscribed at the end of each folio, some of the copyists introduced a change in form to the catchword written on the final page of the quire, either by varying its location, decorating it differently or using a different type of script. Such catchwords should be regarding as quire catchwords.

A1. Quire catchwords

17 MS London Ar. Or. (Margoliouth Catalogue 68).
18 This calculation includes the practice of copyists who assisted a senior copyist. For vertical catchwords in Latin and Greek manuscripts see Vezin’s article, ‘Codicologie comparée’ (above, n. 7).
19 E.g. Codices hebraici, Part II, ms. 22.
20 Ibid. mss 29 (by one of the scribes), 33, 38.
21 The cited rates do not include manuscripts in which the sequence of the text is protected by foliation and in whose quires the final folio catchword was not written in a different fashion.
A quire catchword is a word written in the margins at the bottom of the final page of the quire, repeating the first word of the next quire.

This was the ordinary device in parchment manuscripts, whereas paper (or mixed-quire) manuscripts utilized bifolium or folio catchwords as well. Quire catchwords were less used in the Orient, especially in the eleventh and twelfth centuries, and scribes preferred at that period quire signatures. However this finding may be distorted because of the great number of fragmented manuscripts. In Franco-German areas, apart from a few exceptions, quire catchwords were the only system for ensuring the quire order, and they appear in more than half of the few paper manuscripts.22

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22 Catchwords inscribed also in the middle of the quire (at the end of the first half of the quire, on the right hand page of the central opening), perhaps to indicate to the binder which was the central opening to be stitched (like the marking of the opening in Oriental manuscripts, see below) were added in three manuscripts written in several areas: MS St. Peterburg Eap. I 484, written in Byzantium in 1348; MS St. Peterburg, Eap. I 1345; copied in the Middle East in 1397; MS Prague NL XXIX 53 (formerly MS Breslau Seminar, Loewinger & Weinryb Catalogue 14; recently the manuscript has been transferred – along with the other manuscripts deriving from this collection – to the Jewish community in Wrocław and deposited in the University library there), which was written in 1477 in Cingoli, central Italy). This phenomenon is also known from a few Arabic manuscripts. See Guesdon, ‘Les réclames dans les manuscrits arabes’ (above, n.10), p. 69, where she mentions another rare system – a folio catchword on the first and last pages of a quire.
A2. Bifolium catchwords

The quire catchword method was meant to ensure the correct sequence of the units that make up the codex – the quires. The purpose of the bifolium catchword method was to ensure the right order of the quire’s building blocks – the bifolia. This method entailed writing the catchwords at the end of the first verso folio of each bifolium, i.e. on the verso folios of the first half of the quire. It was sufficient, of course, to concatenate (these folios in order to ensure also the order of the folios of the second half of the quire which were attached to each other as bifolia.

This method was presumably meant to ensure the correct order of copying when it was carried out on separate unstitched bifolia, rather than to ensure the order of the codex after it was written. In most manuscripts, folio catchwords and bifolium catchwords began to be used at around the same time period. However, folio catchwords did appear even earlier in a few manuscripts, although this method is less economical than the bifolium catchword method and seems to include superfluous markings. Despite the earliest use of bifolium catchwords in a mixed quire manuscript from 1225 in Spain, it appeared in all other areas only in the fourteenth century, and especially in the latter end of that century. Yet, astonishingly, the distribution of this detailed and yet economical marking was limited in comparison with the distribution of the folio catchword method. It was implemented in only 4 percent of all the manuscripts in the corpus of dated manuscripts, written from 1225-1500, while the proportion of manuscripts in which catchwords appear on all folios of the quire is about 40 percent, i.e. ten time more frequently. Although the writing of catchwords in the second half of the quire (except for the final one) was not necessary, it was apparently more ergometrical, because it relieved the copyist of the need to remember to stop writing catchwords after reaching the middle opening of the quire. The same applies to the catchword appearing at the end of the final folio of the first half of the quire, i.e. the verso page of the mid-quire opening, which was written in most manuscripts with bifolium catchwords although it is superfluous, and in fact is not a bifolium catchword at all, but rather a folio catchword between the pair of folios of the central bifolium. Indeed, to ensure the order of the quire’s bifolia, it would have been

\[23\] MS Jerusalem Yah Ms. Heb. 1 (Manuscrits médiévaux I, 2), which is the earliest dated manuscripts with bifolium catchwords.

\[24\] For the first time in the Orient in 1313, in Byzantium in 1384, in Ashkenaz in 1386, in Italy in 1397 (by a Sefardic copyist, and by an Italian copyist – in 1416).
sufficient to inscribe catchwords in its first half, minus the central bifolium, as was practiced by about a fifth of the copyists who adopted this particular method.  

A3. Folio catchwords

The practice of writing a catchword on every folio of a codex was the most widespread means of ensuring its order, and it was used in the late paper manuscripts in all the zones of Hebrew book production. It makes sense that this practice emerged in the Orient where most of the manuscripts written from the eleventh century onward were made of paper and were more fragile, with their bindings being prone to fall apart and the leaves separating. Indeed, the scribes of the Oriental parchment manuscripts and in Yemen even in late periods, only employed methods for ensuring the order of quires. However, it is not unlikely that the reason this method of individual markings became widespread was that it facilitated the more convenient practice of copying on unstitched bifolia, as the sequence of the copying required the scribe to switch from one bifolium to another and then to return to the previous bifolium in order to inscribe its second folio inconsecutively. An Oriental paper manuscript from 1168 is the first extant Hebrew dated manuscript in which the copyist inscribed a catchword regularly (sometimes the last word of a folio was repeated at the head of the consecutive one instead of a catchword). Notably, this copyist did not write catchwords in the middle openings of the quires, according to the abovementioned custom of several later copyists who employed bifolium catchwords.

The spread of the folio catchword method outside of the Orient matches the spread of the use of paper. It was this method that was used to ensure the order of the codex in approximately two-thirds of all the dated manuscripts and which were written on paper.

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25 In her article ‘Les réclames dans les manuscrits arabes’ ([above, n. 10], p. 69), Guesdon also noticed that the catchword was left out of the middle opening of the quire in some Arabic manuscripts. In MS Vatican Urb. ebr. 41, written, apparently in Bologna, in 1422, the Sefardic (or Provençal) copyists wrote the bifolium catchwords in the second half of the quire (and also at its opening). In MS Oxford, MS. Opp. 676 (Neubauer Catalogue 1158), written in Ashkenaz around the first quarter of the 15\textsuperscript{th} century, the catchwords only contain the first letter of the first word of the following bifolium, in a manner reminiscent of the way bifolium catchwords are written in an Oriental manuscript written perhaps during the 13\textsuperscript{th} century (MS St. Petersburg Eap. II A32/1).

26 MS St. Petersburg Eap.-Apa6. I 1404, written in the ‘Island of Kaftor’ (Damieta, Egypt, see Codices hebraïques, Part IV, ms. 77), the earliest signs of this method are already seen here and there in the manuscript of Saadia Gaon’s Ta\textsuperscript{f}ir, a translation of the Pentateuch into Judaeo-Arabic kept in a private collection in Israel, which was written by Ephraim ben Sar Shalom HaRofe HaLevy in Masiaf (Syria) in 1146. The dates cited below are of manuscripts in which the folio catchwords are used regularly (sometimes replaced by repeated words). Manuscripts in which the leaf catchwords appear sporadically only occur in all zones, and they predate the manuscripts in which the use of catchwords is regular.
paper or mixed paper and parchment during fourteenth and fifteenth century, while in parchment manuscripts it appears in just over 10 percent of them. In the Middle East the method became widespread only in the second half of the fourteenth century, although the standard use of paper had begun there already in the beginning of the eleventh century. In the fifteenth century the method is evidence in 76 percent of all manuscripts in the corpus in which the writing material is either paper or mixed paper and parchment (and in Yemen a slightly lower figure). In the zones of Sefardic culture, where paper became a common writing material before it spread to other regions of Europe, the earliest occurrence of folio catchwords is in a Provençal parchment manuscript, produced in 1284 (as in numerous other manuscripts, sometimes repeated words rather than catchwords were written in it). As in the Orient, in Sefardic zone the method became widespread in the fourteenth century alongside the spread of paper, and came to be used in the vast majority of paper (or mixed paper and parchment) manuscripts in the fifteenth century (86 percent; this ratio takes into account the number of hands in manuscripts written by multiple hands). In Byzantium also the earliest use of catchwords was found in a parchment manuscript from the thirteenth century (1298). In this region, in which the vast majority of books were produced on paper, the use of catchwords spread already in the fourteenth century, and in the fifteenth century, the rate of its use approached that of Spain. In Italy, where no evidence of use of catchwords has been found until a century later (for the first time in 1382), and where parchment continued to dominate book production for many more decades, the copyists of most paper (or of paper and parchment) manuscripts in the fifteenth century – almost half of them immigrants, from Spain and Provence especially, who may have caused the spread of the custom – adopted the new practice quickly (and its ratio in these manuscripts was around 60%). The first evidence in Ashkenaz of folio catchwords is from that approximate time (France? 1390), in a parchment manuscript. Twenty-three percent of the few manuscripts written on paper in Germany in the fifteenth century display the new method.

27 MS Parma Parm. 3239 (De-Rossi Catalogue 298), written in Tarascon.
A.4 Page and column catchwords

Catchwords written at the end of every page (rather than only on the verso) are extremely rare, their purpose is unclear, and presumably they were written by force of habit during the copying process. In Ashkenazic manuscripts in which halakhic corpora were written with integrated columns of glosses, or in multilayer copyings of a basic text surrounded by commentary or of unrelated marginal texts, the fourteenth century copyists tended to add secondary catchwords at the ends of the columns of these components of the text in order to guide the reader to the correct reading sequence of these complex components. These column catchwords were frequently written at the end of the final line of a gloss column or of the commentary as if they were counter-catchwords, as in the example below, where in the margins of Hilkhot HaRIf, copied in Spain in a square Sefardic script, a column of Rashi’s commentary and other commentaries were added in 1386 in a semi-cursive Ashkenazic script.

![Image of Hilkhot HaRIf](image)

28 Folio catchwords that occurs randomly here and there, certainly without forethought, appears already in manuscripts from the end of the 13th century and onward. In 24 manuscripts catchwords were systematically inscribed not only on the folio verso but also on the folio recto. The earliest was written in Bursa (Turkey) in 1377 by two scribes (MS New York MS 8225). The rest were produced in the 15th century in Italy, Byzantium, the Middle East and Germany.

29 In MS Nîmes, Municipal Library 365, copied in Italy in 1454 by a Provençal copyist, in addition to the bifolium catchwords the copyist wrote a catchword beneath the first of the two columns inscribed on the page.

30 I have observed something like column catchwords in copies of Latin glossed Bibles, which were prepared for Thomas Becket, the archbishop of Canterbury, during his years of exile in France in 1170-1164, and were written, to the best of my estimation, by a single hand. In these manuscripts, when an interpretive gloss written in a miniature script exceeded the margins of the column, the copyists marked the end of the column and the head of the following column with an identical graphic marking, a kind of graphic column catchword. Each such gloss was given a different graphic marking in order to help the reader navigate the consecutive glosses embedded in the biblical text. See MS Cambridge, Trinity College, B. 3. 11, B. 4. 30, B. 5. 5.
B. Counter-catchwords
As mentioned earlier, the counter-catchword method is merely a variation of the catchword method, differing only in the fact that counter-catchwords do not stand out by being written outside the written area like catchwords, and for the most part they are not decorated but simply repeated and absorbed into the body text in the transition between the end of one quire, bifolium or folio and the beginning of the following one, respectively (see example below).

![Image of a manuscript page showing counter-catchwords]

The extent to which the counter-catchword method was a limited extension of the catchword method is evidenced by the manuscripts in which the two methods are mixed. Because this mode of concatenation is assimilated into the text, it is difficult to discern. This secondary method was similar in implementation to catchwords – quires were placed in sequence by repeating the final word of one quire at the head of the following one, bifolia were concatenated with a repeated word at the head of the first half of the quire’s bifolia, and repeated words similarly strung together folio to folio. The counter-catchword method was known to copyists in all zones but was prevalent...
mostly in Sefarad and Byzantium, and to a lesser extent in Italy. However, its use at the head of a leaf actually became widespread, especially in Sefarad (19%) and in Byzantium (15%). Unlike catchwords, counter-catchwords at the heads of folios were only slightly more frequent in paper manuscripts. Scribes who copied prestigious parchment manuscripts did not hesitate to use this method because of its understated form, which is not at all noticeable to a casual glance of page, as opposed to the catchwords’ pronounced form. A third of all manuscripts in the dated that employ this method – whether for quires, bifolia, or leaves – are made of parchment.

The earliest manuscript containing counter-catchwords is an Oriental paper manuscript of 1112, where the last word of the quire is repeated at the beginning of the successive quire.\(^ {31}\) In another Oriental manuscript, dated 1282, there are folio counter-catchwords. Counter-catchwords can be observed in many manuscripts in all the geo-cultural zones; however, in a considerable part of them they are not employed regularly, but rather as random substitute for catchwords. Outside the Orient, counter-catchwords appear in a Spanish parchment manuscript dated 1214, (one of the earliest dated manuscripts to survive from the zone of Sefardic bookmaking), where it was implemented twice – at the beginning of the quire’s bifolia (including the recto of the central bifolium opening) and at the beginning of quires.\(^ {32}\) Folio counter-catchwords appear in a mixed-quires codex written in טראבנס (Tripoli, Libya) in 1293\(^ {33}\). Since then many Sefardic scribes applied the repeated words at the beginning of each leaf.

The earliest Byzantine manuscript with regular use of folio counter-catchwords is mixed-quires codex dated 1319 (\(^ {34}\)). In Italy, as in the Orient, the method spread especially in the fourteenth century, and many of the scribes who employed it were immigrants from Ashkenaz, Spain, and Provence. The earliest instance of the method in Italy is a quire catchword in a manuscript from 1266,\(^ {35}\) and it was first implemented regularly at the beginning of each folio in 1312.\(^ {36}\) In the Ashkenazic zone, where the use of counter-catchwords was more limited (see its distribution in table 20, below), it

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31 See *Codices hebraicis*, Part III, ms. 53.
32 MS Vatican Urb. ebr. 54.
33 MS Vatican Vat. ebr. 358.
34 MS St. Petersburg Exp. I 479. The earliest occurrence of repeated words at the head of a few folios and quires is in the copying made by the first copyist (of the two Byzantine copyists who shared the labour), in the earliest extant manuscripts with mixed quires, written in Alexandria in 1212 (see above, chapter 2, notes 124-125).
35 In the copying by the first scribe who copied most of MS Parma Parm. 2750 (De-Rossi Catalogue 422; cf. Richler & Beit-Arié Catalogue [Parma] 762), which was produced in Salerno in southern Italy.
36 In a parchment manuscript written in Bevagne, MS Parma Parm. 3256 (De-Rossi Catalogue 682).
was first implemented regularly at the beginning of the folios in a parchment manuscript from 1322.\textsuperscript{37}

The method of writing counter-catchwords instead of catchwords is known from a few Arabic manuscripts from the fourteenth and fifteenth centuries.\textsuperscript{38}

\textbf{2. Signatures}\textsuperscript{39}

The second main method for ensuring the correct order of the codex was the numbering of its units. Numbering quires in sequence was the most common method, while the numbering of bifolia, folios, and even pages was rare in medieval Hebrew manuscripts. Only folio signatures were relatively common in many dated manuscripts.

Quire signatures appear for the first time in dated manuscripts in the earliest extant paper codex (which is not a small fragment), written in Fustāṭ (Egypt) in 1006. It is a Karaite codex written in Judaeo-Arabic, which also contains, for the first time, catchwords.\textsuperscript{40} The use of signatures was the commonest method of ordering codices in the early periods in the Orient,\textsuperscript{41} but there is still no evidence of it in the earliest manuscripts produced in North Africa or Italy. Usually signatures coexist along with quire catchwords, serving as parallel and double means for ensuring the correct order of a codex’s quires, as in the abovementioned earliest manuscript of 1006. However, of all the manuscripts whose quires are numbered in the corpus under discussion, quire signatures appear alone without catchwords in more than a tenth of them, most produced in the Orient (where more than a quarter of manuscripts were numbered in similar fashion) but also in Spain (where quire signatures appears in one seventh of all manuscripts).

\textsuperscript{37} MS Parma Parm. 2476 (De-Rossi Catalogue 1101), written in זָולוטר (apparently Solothurn, Switzerland).

\textsuperscript{38} See the article by Guesdon, (above, n. 10), p. 68.

\textsuperscript{39} ‘Signature’ in English and in French; ‘signatura’ in Italian and Signaur in German. From the 13\textsuperscript{th} century onward double signatures were customarily used in Latin manuscripts – numbering of the quires as well as an internal numbering of the quire’s bifolia. Such double signatures were known in Hebrew printed books, where it was required by the method of imposition and folding of the printed sheets. In Hebrew manuscripts this method is rare. The type of signatures has been defined according to the units of the material divisions of text – quire signatures, bifolia signatures, and folio signatures.

\textsuperscript{40} See \textit{Codices hebraici}, Part I, ms. 16. The presence of quire signatures in MS Cairo of the Prophets, ostensibly written by Moshe Ben Asher in 894/5 in Tiberias (\textit{ibid.}, ms. 1) and the absence of signatures in 10th century manuscripts reinforce the doubts regarding the authenticity of its colophons. Like the quire signatures by the scribe of MS Cairo, the quire signatures in MS St. Petersburg, Oriental Institute D 62, with an ostensible sale date of 847, provides a further argument against the authenticity of this notice of sale.

\textsuperscript{41} See e.g., the manuscripts mentioned in n. 51 below.
The digits in all the numbering systems are expressed almost exclusively by Hebrew letters, which is the normal means of numeration in Hebrew. In the Middle East, parallel signatures were not infrequently added in Arabic, along with the numbers in word form in Arabic script, presumably intended for a non-Jewish binder, and based on the different ink in which such signatures were written, they may also have been made by the binder.

The double signatures in Hebrew and Arabic are very common, appearing in almost half of Oriental manuscripts with quire signatures, almost all of which are written in Judaeo-Arabic. Usually the Arabic equivalent signatures (in numerals) are added only opposite the Hebrew signatures at the beginnings of the quires (even when the ends of the quires were numbered) at the upper left corner. In a few of these manuscripts (some two dozen) the parallel signatures are written in Arabic numerals and not in Arabic words in Arabic script. The addition of the Arabic signatures to Hebrew ones was already in use in the eleventh century.

42 The same practice was also followed by Greek, Latin, and Syriac copyists, see. Briquel-Chatonnet, ‘Cahiers et signatures dans les manuscrits syriaques’ (above, n. 9). It should be recalled that the Jews inherited the method of using the letters of the alphabet for numerical notation and for gematria from the Greeks (see recently, G. Darshan, ‘Twenty-Four or Twenty-Two Books of the Bible and the Hommeric Corpus’, Tarbiz, 77 (2007), p. 20 (in Hebrew). The numeration of quires with Greek letters was added to MS Jerusalem Heb. 8° 3941, a Byzantine manuscript from the 13th century, which contains a corpus on medical works by Maimonides in an unknown translation; see M. Beit-Arié, ‘A Palaeographical Description of the Jerusalem Hebrew Manuscript’, in Moses Maimonides on the Causes of Symptoms, eds. J.O. Leibowitz & S. Marcus, Berkeley – Los Angeles – London 1974, pp. 34–38. Similarly, Greek letters were written at the head of the quires in MS Leipzig. UB B.H. 13, written in Saloniki in 1329; however the end of the quires display Hebrew numbering. In MS Oxford MSS. Poc. 314, 344 (Neubauer Catalogue nos. 318-319) written in Tripoli, Lebanon between 1380-1385, the heads of the quires were numbered not with letters but with dots in the upper left hand corner (cf. a similar phenomenon in the Greek manuscript described below in n. 52). In the first ten quires of MS Paris Hébreu 169 (Manuscrits médiévaux II, 8), which was produced in Italy in 1253, the quire numbers were noted with words. Quires were similarly numerated in one of the few manuscripts from Ashkenaz that was numbered, MS Oxford MS. Mich, 50 (Neubauer Catalog 882), written apparently in France without a date notation (apparently between 1296 and 1320). In this manuscript the numbers were noted within rhyming blessing formulae, e.g. סייםתי קורס רביעי, יברכני ה' רועי.

43 As customary in Arabic manuscripts. See Guesdon, ‘La numération des cahiers et la foliotation’ (above, n. 10). Guesdon notes there that the numeration of quires was generally written in word form, but that Qur’anic quires were never numbered. See also her comments about the means for ensuring the order of the codex in Arabic manuscripts, in the subchapter she wrote “Systems to Indicate the Order of Folios’ (above, n. 10), p. 90. There she noted only the lack of numeration of quires in early Qur’ans (François Déroche notes that these quires were not numbered until the 15th century; personal communication). In the aforementioned subchapter (ibid. p. 95) Guesdon describes an Arabic manuscript of the Qanun by Ibn Sina which was written in 1130 (MS Paris arabe 1130), and was owned by Jews, in which the numeration of quires and foliation is written in Hebrew letters.

44 In MS St. Petersburg Евр.Араб. I 1346, which was copied in the Orient in 1397, numeration was added in Arabic words not only at the heads of quires but also at their ends (without using Hebrew numeration). The same method is used in MS St. Petersburg Евр.-Ара6. I 1817 from 1452, in which the ends of quires were numbered with Hebrew letters. In this manuscript the word كراس, i.e. quire, is written in Arabic script above the number in Arabic which is rendered in Hebrew script, and this form appears also in several later manuscripts, apparently all Karaite ones.
Arabic signatures were also added in an early period to the Hebrew numbering which had been added by a different hand to the earliest manuscripts containing the entire Bible, written in Cairo in 1008 (which also contains the first evidence of quire catchwords in a biblical codex).

2a. Quire signatures
Quire signatures were especially common in the Orient, where they are found in almost two thirds of non-fragmented codices in the corpus under discussion, and particularly in Yemen, where they occur in 89% of manuscripts, as well as in Italy, where the rate was 45% (although the rate in parchment manuscripts produced in Italy was even greater and similar to the rate of quire signatures

45 See *Codices hebraicis*, Part I, ms. 17. The numbering of quires in Arabic only has survived in a fragmented Oriental manuscript written in 1048 (see *Codices hebraicis*, Part II, ms. 33, and in a manuscript written in Aden in 1114, *ibid.*, Part IV, ms. 70). In parallel to the Hebrew signatures, which appear at the head of the quire in the upper right hand margins, the Arabic signatures are written on the opposite side in the upper left hand margins. Numbering in word form in Arabic also appears in a complete quire that has survived from a draft of Maimonides' Mishne Tora in his own handwriting – MS Oxford MS. Heb. d.32 (fol. 47r) – as well as in one of the autographed manuscripts of his commentary on the Mishna – MS Oxford MS. Hunt. 117 (Neubauer Catalogue 393), in which all the beginnings of the quires are numbered with Judaeo-Arabic words only.
altogether in Oriental manuscripts). Merely partial numbering appears in one of the earliest dated manuscripts, produced apparently in Italy, the famous MS Reuchlin of 1105/6, but its regular use in manuscripts produced in Italy appears for the first time only in a manuscript from 1246/7. Signatures were also common in Sefardic book culture (in slightly more than a quarter of all the manuscripts in the corpus defined above), but were extremely rare before the final quarter of the thirteenth century. Byzantine manuscript contained quire signatures only rarely and they are practically non-existent in Ashkenazic manuscripts. In all regions (except for Ashkenaz of course, and the Orient) quires signatures were more common in parchment than in paper quires. In the dated corpus codices of the Sefardic zones containing quire signatures, the proportion of parchment manuscripts is twice that of paper manuscripts (67% versus 33%). In Italy the difference is even greater (78% versus 22%). This characteristic cannot apply to the Orient in which most manuscripts were made of paper.

The placement of the quire signatures
The placement practice relates to two positions – the position of signatures in the quire and their place on the page in which they are written. The numbering in Hebrew manuscripts may be written at the head of each quire only (except for in the first quire), or at the end of the quire only (except in the last quire), or at the beginning of each quire and once again at its end, and in a few manuscripts at the beginning of each quire, with the same number appearing at the end of the preceding quire, as a kind of signature-catchword. Almost without exception, the numerator letters were inscribed at the upper right corner of the first page of the quire when quire beginnings were numbered, and at the lower left corner of the last page (close to the placement of the catchwords) when the ends of the quires were numbered. From among all the

46 In Hebrew parchment manuscripts produced in Italy in the 15th century signatures were tenfold more widespread than in Humanist parchment manuscripts, among which, according to the extensive survey by Derolez (Codicologie, vol. 1, p. 63), the ratio of manuscripts with signatures is only 6.6%.
47 See Codices hebraici, Part III, ms. 48.
48 See Manuscrits médiévaux II, 7. However, note that only one dated manuscript, from 1145, has survived from Italy between these two manuscripts (See Codices hebraici, Part IV, ms. 71).
49 From among 361 dated Ashkenazi manuscripts before 1540, quires were numbered in only a dozen of the 13th century manuscripts, and in a comparable number of undated and unlocalised manuscripts. In connection with this issue, see Thérèse and Mendel Metzger comments on Beit-Arié’s book, Makings, p. 139). Some of these signatures were executed in an unusual manner, similar to catchwords (see below, section 2a (4): with a signature appearing at the end of a quire and at the head of its successor).
50 In MS Oxford MS. Hunt. 164 (Neubauer Catalogue 1249), produced in Mardin in East Turkey, signatures were written at the heads of the quires in the left corner of the upper margins. In MS San
manuscripts containing quire signatures the ratio of manuscripts with double signatures, at the beginning and end of the quires is 56%; the ratio of manuscripts with signatures at the beginning of the quires is 30%, and with signatures at the end of the quire 19% (the number of manuscripts containing quire signatures is smaller than the total number of manuscripts counted by reference to the placement of the signatures, because the manuscripts containing some quires with one signature placement and others with a different signature placement were counted more than once. Since the ratios relate to the number of the manuscripts in the corpus, the sum of the two ratios exceeds 100 percent).

Not one of the geo-cultural zones adheres to a single positioning, but regional preferences are noticeable. Generally delineated, the following is the regional distribution of the signature placement in quires: In the Orient, most of the manuscripts with quire signatures place them at the head; until mid-twelfth century this is the placement witnessed in all the extant manuscripts. Double numbering appears in less than a quarter of the manuscripts manufactured there and in less than a tenth of them the numbering exists at the end of quire. These data indicate that many manuscripts are not uniform in regard to the positioning of the quire signatures. In Yemen almost two-thirds of the manuscripts have double signatures, and in about a third the signatures are at the head. In Sefarad the ratio of double placement is similar to that of Yemen, but it is placed at the head only in less than a quarter of them, and the ratio of manuscripts with end signatures is slightly greater. In Italy more than two-thirds of manuscripts have double signatures, around a quarter have end signatures and only one tenth of them has head signatures. In Byzantium the number of manuscripts with quire signatures is very small.

2a (1) Signatures at the head of each quire only
As noted, all early Oriental manuscripts (before the middle of the twelfth century) containing quire signatures or remnants of signatures display the numbering at the

Francisco, Sutro WPA 106, copied in Yemen in 1299, beginnings and ends of quires were numbered at the upper right hand corner, and sometimes in the middle of the upper margin, and in MS St. Petersburg Eap. II B 4, written in the Middle East, apparently, during the first half of the 11th century, all the signatures, whether at the beginning or the end of the quires, are written in large letters in the middle of the upper margins, while in MS Vatican Vat. ebr. 15, a German manuscript written in 1320 with a unique type of signatures in the style of a catchword (see below, section 2a (4): a signature appearing at the end of a quire and at the head of its successor), the quire signatures appear in the lower margins of the quire’s last page, and on the facing first page of the next quire.

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head of the quire, at the right hand corner of the upper margins.\textsuperscript{51} Because of this location, many signatures have been damaged (as well as head signatures using double numbering) or have not survived at all, especially when the numbering was inscribed near the edge of the page. The numbering was written in Hebrew characters. This was also the standard method of numbering quires in the Middle East in the later period.

The placement at the head of the quire is identical to the placement of quire signatures in early Greek manuscripts,\textsuperscript{52} however, taking account the direction of writing, there is of course a difference between the Hebrew custom of placing the numbering at the right upper margin and the Greek custom. The influence of Syriac manuscripts on the design of the Oriental Hebrew codex was probably greater; in these manuscripts, from the time quire signatures are first witnessed in the sixth century, double numbering was used at the head and end of each quire (as in many Hebrew manuscripts, as will be shown below), and its placement is almost always in the middle of the lower margins.\textsuperscript{53}

Among Hebrew manuscripts the placement of quires signatures at the head only was widespread in Oriental manuscripts (80% of manuscripts Oriental manuscripts with quire signatures, 37% of manuscripts written in Yemen). Outside of the Middle Eastern zones quire signatures placed at the head were less frequent (19% in Spain, 10% in Italy).

\textsuperscript{51} E.g. \textit{Codices hebraicis}, Part II, ms. 20-23, 26, 27, 33, 34.
\textsuperscript{52} See Irigoin, ‘Centres de copie byzantins’ (1958), p. 222, where he writes that this placement of the signatures is characteristic of Greek manuscripts before the 9\textsuperscript{th} century; Turner, Early Codex, pp. 77-78. Turner notes that when the numbering was doubled at the end of the quires in early Latin codices, it was usually written in the lower right hand corner or middle of the lower margins, and that signatures in Roman numerals were preceded by the letter Q (quaternio, a quire made of four bifolia). Cf. Lowe, CLA, vol. 6, p. vii. According to Lowe, early Latin codices between the 5\textsuperscript{th} century and 800 displayed quire signatures at the beginning of the quire only, and in Latin numerals, usually preceded by the letter Q, as mentioned above. See E.A. Lowe, ‘Some Facts about our Oldest Latin Manuscripts’, \textit{The Classical Quarterly}, 19 (1925), pp. 197–203, 208 (=\textit{Palaeographical Papers} 1907–1965, ed. L. Biehler, vol. 1, Oxford 1972, pp. 188–195, 202); idem, ‘More Facts about our Oldest Latin Manuscripts’, \textit{ibid.}, 22 (1928), pp. 44–57, 59–60 (= \textit{ibid.}, pp. 252–267, 271–272).

On the numbering of quires in Greek manuscripts in later periods, see J. Leroy, ‘La description codicologique des manuscrits grecs de parchemin’, in \textit{La paléographie grecque et byzantine}, ed. J. Irigoin & J. Bompair (Colloques Internationaux du CNRS 559), Paris 1977, pp. 39–41. Unlike the Latin manuscripts, in which the placement of the signature was usually in the lower margins of the final page of the quire, in Greek manuscripts the placement varied. This variation is apparent already in the 8\textsuperscript{th} and 9\textsuperscript{th} centuries. Leroy cites examples of signature notations in the form of dots and punctures. On signatures at the head and end of the quire and the great variation in placement of signatures on the page, cf. the article by B. Mondrain, ‘Les signatures des cahiers dans les manuscrits grecs, in: Hoffman (ed.) \textit{Codicologie comparée}, p. 23.

\textsuperscript{53} Briquel-Chatonnet, ‘Cahiers et signatures dans les manuscrits syriaques’ (above, n.9).
2a (2) Signatures at the end of the quire only

The method of placing signatures at the end of the quire only was not very widespread and was implemented in less than a fifth of the manuscripts with quire. While it was not a preferred method in any region, it nevertheless stands out more in manuscripts written in Sefarad (23% of the manuscripts with quire signatures) and in Italy (24%), while in the Orient and in Yemen, where quire signatures were widespread, the ratio of manuscripts that display this method is less than a tenth. Only a few manuscripts with quire signatures are found in Ashkenaz, a third of which display numbering at the end of the quire.

2a (3) Signatures both at the head and end of the quire

Double numbering of quires had a clear advantage over single numbering, since the order of the quires and their sequencing was apparent at each transition from one quire to the next. The earliest evidence we have of double numbering in Hebrew manuscripts is from a Hebrew codex written in the Orient in 1112, in which one of the quires was numbered both at the beginning and at the end.\(^{54}\) Double numbering appears regularly for the first time in another Oriental manuscript written in

\(^{54}\) See *Codices hebraici*, Part II, ms. 7.
Damascus in 1161/2. In the Iberian Peninsula double numbering appeared for the first time in Gerona in 1184 in the earliest parchment manuscript that survived from that zone, and in the Italian peninsula the earliest evidence of double numbering is from 1246/7.

This method was preferred in Yemen, where its rate is 63% of signatured manuscripts, in Sefarad the rate is of 60% of such manuscripts and in Italy 69%. The frequency of manuscripts with this manner of signatures in Italy before the fifteenth century was even greater, but it lessened considerably in the fifteenth century, when the rate was only 20%, mostly in parchment manuscripts. The sharp decrease was the result of the increase of paper manuscripts: because they were so fragile the copyists preferred to implement means of preserving the order of folios. In fifteenth century Spain there was a drop in the rate of manuscripts using double numbering. In the Orient (except for Yemen) the method had a smaller yet recognisable distribution – around one fifth of all the manuscripts. In the Byzantine zone, where the signature method did not spread at all, the use of double numbering was negligible, and in France and Germany the method never occurs.

2a (4) Numbering at the end of the quire and at the head of the next quire (counter-signatures)

This rare numbering method involved numbering the end of the quire and repeating the same signature at the head of the next quire, as if it were a kind of quire catchword. This method is unusual, and its earliest witnesses were discovered in Ahskenaz – a zone in which scribes did not usually number quires – in a few undated manuscripts from Germany and France from the thirteenth century. This discovery was a random one, since manuscripts that were either undated or lacked the name of the copyists were not documented in the database of manuscripts. The signatures appear in a few of the manuscripts with a date – two from fourteenth century Ashkenaz (from 1320 and from 1347) and a few from Byzantium, Provence, and Italy from the fourteenth and fifteenth century.

55 MS London Or. 2595 (Margaliouth Catalogue 95) and MS St. Petersburg, Евр.-Араб. II 675 (a fragmented manuscript that was split, see Codices hebraicis, Part IV, Hebrew introduction, MS D.)
56 The famous manuscript of the Talmud that includes the three 'Bava' tractates, MS Hamburg, SUB Cod. Hebr.19 (Steinschneider Catalogue 165).
57 See Codices hebraicis, Part II, ms. 7.
2b. Bifolium signatures

Numbering of bifolia, folios, and pages was not at all common in Hebrew manuscripts. The numbering of quire bifolia on the verso folios in the margins of the first half of the quire is extremely rare in medieval Hebrew manuscripts. In Latin manuscripts numbering of the bifolia each quire, always accompanied by the quire signature, appeared in the twelfth century. Among dated Hebrew manuscripts the first witnesses for the use of double signatures to ensure the order of the quires in a codex, and the order of the bifolia within each quire are from the Middle East, and they appear in a number of paper manuscripts in Judaeo-Arabic (especially Karaite manuscripts), written from the middle of the twelfth century until the late fourteenth century. The numbering of the quire bifolia generally following the method of numbering in Latin manuscripts, but indicating, in effect, the influence of Arabic manuscripts. In early Oriental manuscripts the bifolia signatures are written in conjunction with the quire signatures, usually in Arabic but also in Hebrew, e.g. ב' מ (i.e. the second bifolium of the third quire, etc.). Outside of the Orient, bifolia signatures appeared in Germany at a later date and infrequently (for the first time in 1392 in a dated manuscript), in Italy (for the first time, apparently, in the beginning of the fourteenth century in a manuscript written in Salerno, but the scribe, who wrote two colophons with his name and that of the person who commissioned the copy, did not inscribe the date, and later in a few dated manuscripts written in the fifteenth century), and very seldom in Spain.

58 See, J. Vezin, ‘Les cahiers dans les manuscrits latins’, in: Hoffman (ed.) Codicologie comparée, p. 103-104. As the practice of numbering bifolia became widespread in Latin codices, the number of each quire was written on each bifolium next to the number of the bifolium (cf. above, chapter 4, end of n. 14), as it did later in print books. In Hebrew printed books the method of numbering bifolia paralleled the numbering methods of Latin printed books.

59 The earliest manuscript was written in Masiaf (Syria) in 1146 (see Codices hebraicis, Part IV, Hebrew introduction ms. A).

60 In six quires of MS St. Petersburg Eap.-Apa6. I 671 (see Codices hebraicis, Part IV, ms. 88), the numbering the bifolia – except of course for the first (outer) one, where the numbering is not necessary – made use of the ordinal number of the bifolium within the quire, which was also numbered ordinally. The numbering was inscribed in Arabic numerals and in Arabic script in all the bifolia, and worded usually “5 of 2” (i.e. fifth bifolium of the second quire). On the Arabic custom see P. Orsatti, “Le manuscrit islamique: caractéristiques matérielles et typologie” in Maniaci & Munafò (eds.), Book Materials and Techniques, vol. 2,318-319.

61 In an undated Ashkenazic quire from the end of the 13th century or the beginning of the 14th century (MS Berlin Ms. Or. 4°701 [Steinschneider Catalogue 148], pp. 96-105), at the bottom of the third folio (fol. 98v) the copyist noted in large letters the words הראשון שליש (i.e. the third folio in the first quire) and at the bottom of the fourth folio (fol. 99v) he noted:.charAt(0) את ארבעי השליש (i.e. the fourth folio of the first quire, reversing the order of the previous notation).

62 In MS New York R15, made of mixed quires, written in Ubeda (Spain) in 1290, bifolia signatures survived in only two of the inner paper quires. The signatures, which may have been added by another
2c. Foliation (folio signatures)

Numbering of folios (foliation) in the copyist’s own hand was not at all common, and appears in only one percent of the manuscripts in the corpus under discussion (during the first decades of the sixteenth century there was a considerable increase in its use). Foliation was sometimes the custom in Spain and Italy, but not in the Middle East or Byzantium. Only in Spain, for the first time in 1272, was foliation used in a larger number of manuscripts with relative continuity, especially in parchment manuscripts. While the earliest extant example of foliation from Italy is in a manuscript from 1286, subsequent to this single manuscript foliation is evidenced only in the fifteenth century. A small number of foliated manuscripts from Ashkenaz survived from the second half of the fifteenth century.

This simple method of preserving the order of the codex’s leaves was of course also the easiest means for navigating the text, allowing the user to search the book, locate text versions and provide references. Unlike the other methods for ensuring the order of the codex, described above, foliation is not a method whose purpose is to preserve the consecutive order of the codex’s pages for the benefit of the producers of the codex – the copyist and binder; its purpose is rather to benefit the user of the book, providing him with a tool for searches and citations. It is no wonder then that the first foliated manuscripts were biblical books, and that half of all the few foliated manuscripts are biblical books. Many of the other foliated manuscripts contain halakhic works that were frequently consulted, and which had a vital need for a means of locating text passages.

And yet, because of the relatively late development of indexing and tables of contents in copyings of Hebrew works, which required accurate means of referencing the text, the implementation of means for ensuring the order of the codex on each page was a late occurrence in Hebrew manuscript, and in truth, this tool for search and citation was hardly developed in them at all. Indeed, foliation was relatively widespread in Latin manuscripts as early as the twelfth century, and especially from the thirteenth century onward they show the development of alphabetical indices accompanied by

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hand, are doubled in the two halves of the bifolia - on the recto page in the first half of the quire and on the verso page in the second half.

63 MS Paris Hébreu 26, which was written in Toledo (Manuscrits médiévaux I, 8).

64 MS Vatican Ross. 554. The first twelve quires of this manuscript were numbered, but after the thirteenth quire, consecutive foliation replaces the quire signatures. In MS London Or. 10337, a Judaeo-Italian prayer book which was presumably written for a woman, apparently at the turn of the fifteenth and sixteenth centuries, the foliation is in Italian words rendered in Hebrew characters.

65 See Bischoff, Latin Palaeography, p. 23.
references to a textual location in the codex. In contrast, halakhic works for which the means of locating text is vital, had only developed notations of סימנים (numbering the paragraphs of the entire text) and of lists heading or ending the works, in which the סימנים were itemized with an abbreviation of their contents.

Another means of locating text that should be mentioned in this context and that was added to biblical manuscripts and their commentaries as well as to other works, were the ‘running’ titles of books or parts of works, written at the heads of pages and of folios, to help the reader navigate the text. Similarly, notations in the margins in biblical manuscripts were used mostly to indicate the haftara portions, sedarim (the division of the Pentateuch according to the Palestinian tradition of a triennial cycle for Tora reading), and open and closed parashot (section divisions throughout the Masoretic Bible, designated by various types of spacing between them). Chapter 8, below, provides an extensive discussion of the means copyists use to facilitate comprehension of the text and comfort of use and reading.

In Arabic manuscripts from the Middle East – both Muslim and Christian – and from the Maghreb, foliation was rare.66

Pagination (the numbering of codex pages) is found only in a few manuscripts written in the fifteenth century, especially in the latter half, in Ashkenaz, Italy, and Spain.

3. Marking the middle opening of the quire

To prevent folding the quire’s bifolia backwards, it was customary to mark the quire’s central opening, the fold at which the stitching of the quire’s bifolia must begin. This mark, adopted from the custom of Arab copyists or binders, does not in fact ensure the correct order of the quires, but is rather a means that is apparently designed to prevent the quire’s bifolia turning inside out at their opening, before being stitched by the binder. Such an inversion, which can indeed be found here and there in Hebrew European manuscripts, of course upsets the correct order of the quire’s leaves. The central opening of the quire was marked in the corners of the central bifolium, usually in a differently colored ink than that of the written text, and therefore it appears that this marking was not made by the copyist but by the binder,67 or eventually by the

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66 According to Guesdon’s article, ‘La numération des cahiers et la foliotation’ (above, n. 10).
67 In an Arabic work on the art of binding and gilding, the author Abu Al-Abbas Ahmad Ibn Muhammad Al-Sufyiani instructed the binder to mark the middle of the quires with a special instrument. See the English translation by P. Ricard, in an appendix to a work by Levey, Mediaeval Arabic Bookmaking, p. 5. The adding of markings with a different ink from that of the text as well as
owner who gave over the book for rebinding. The central opening was marked in various ways. Sometimes only two corners were marked – the lower-outer corner to the right of the opening (verso) and upper-outer corner to the left of the opening – or vice versa, the upper right hand corner and the lower left, and sometimes all four corners were marked. The shape of the marks are also varied, but for the most part they are brief slanted pen strokes, sometimes thickened, like a Z symbol, which may have perhaps been made by a different instrument or perhaps in a later period.

The appearance of these markings already in manuscripts prior to the year 1006 – the same year in which the two outstanding means for ensuring the order of the quires (catchwords and signatures) appear – does not suffice to prove that the use of this early technique predates their use. If we ignore the remains of markings in a manuscript written ostensibly as early as 894/5, but which in fact, as mentioned, was written one hundred years later than the date inscribed in it,68 we find that the earliest marking of the central opening of a quire is from a fragment of a manuscript from

the above cited Arabic source reveal that it was not the scribes who marked the central (which is also the final) bifolium of the quire to indicate that no bifolia were missing.

68 Codices hebraicus, Part I, ms. 1
929 as well as in the Aleppo Codex, dated from around the same year. The next marking appears in dated manuscripts from 988/9, 1020/1, 101-103, 1034, 1048. In non-fragmented manuscripts the marking can be found in almost one eighth of those written in the Orient and only in 56% of those produced in Yemen. Evidences for markings of the central opening have also been found in the Muslim lands outside the Middle East, although examples are few: the earliest witness comes from the earliest extant manuscript from the zones of Sefardic book culture and generally from outside the Middle East – MS St. Petersburg Евр. II B 124, written in the eighth century of the fifth millennium according to the Hebrew calendar, i.e. between 941 and 1039, and more witnesses are found in a few manuscripts from North Africa dating from the fourteenth and beginning of the fifteenth century. Marking the middle of the quire was very common in Arabic manuscripts even though this practice was only noticed in 1983. Indeed, Guesdon, who intensively researched this practice and even catalogued its forms, discovered it in a great many manuscripts from the Maghreb as well. According to the Arabic manuscripts she examined in France’s Bibliothèque National in Paris, the marking appears especially in manuscripts produced from the end of the eleventh century until the middle of the fourteenth century; however she did not find many witnesses of the practice in Oriental Christian manuscripts (Syriac or Coptic). Guesdon hypothesizes that the marking was intended to prevent mixing up the quire’s bifolia during the binding process, and that perhaps the mark was made even before the copying process. In regard to the form of the marking, Guesdon has commented that in the earliest Arabic

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69 *Ibid.*, ms. 5.
70 *Ibid.*, ms. 6. The existence of three systems for marking the middle quire in this manuscript demonstrates clearly that this marking was added over the course of generations during the rebinding of the codex.
72 *Codices hebraicis*, Part II, ms. 29.
74 This is a peculiar hypothesis if one considers the function of the marking, and it is contradicted by the colour of the ink of many of these markings, which differs from the colour of the ink of the copying of the main body text. Guesdon notes that the colour of the ink in Oriental manuscripts – unlike that of Maghrebi manuscripts – is similar to the colour of the ink in the text.
manuscripts that included the marking, it is in the form of the numeral 5 according to the *rumī* numeral system.⁷⁵

A similar custom is found in Latin manuscripts, as the late codicologist and historian of the British book N.R. Ker has brought to my attention. According to Ker, the recto of the middle opening of a quire was marked by cross markings at the lower margin. In English manuscripts from the fourteenth century, a cross was frequently marked at the fold of the middle opening, with its horizontal arms crossing the fold, and sometimes instead of a cross a simple pen stroke crosses the fold.⁷⁶ A few examples of other methods of marking the middle opening of the quire have been found in Greek manuscripts – numbering the quires at their opening (presumably to mark the opening) and writing the word ‘middle’ in Greek in the middle of the lower margin on the first page of the second half of the quire.⁷⁷

Markings of the middle of the quires are of great avail to codicologists and textual scholars in the attempt to reconstruct the composition of quires and lacunae of damaged and fragmented manuscripts.

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⁷⁵ Guesdon, ‘Systems to Indicate the Order of Folios’ (above, n.10), p. 100. The earliest manuscript she cites is from 1079/80. At any rate, especially common in the Hebrew Oriental manuscripts is the marking that resembles the numeral 5 in the system entitled ghabār (see *ibid.*, p. 97, photographs of both numeration systems and her comment, *ibid.*, p. 100, on the Maghrebi binder’s recommendation in his treatise from 1619 to mark the middle of the quire with a ghabār numeral 5). The use of the numeral 5 or of an evolved form thereof is appropriate to the quinion composition of the Oriental manuscript, and it is therefore meant to designate the fifth, central bifolium in the quire.

⁷⁶ Letter from November 8, 1970. I have noticed cross markings (in an ink unlike the text ink) in Latin manuscripts from France, e.g. MS Cambridge, Trinity College, B. 3.11 written for Thomas Becket during his years of exile in France in 1164-1170 and in MS Cambridge, UL f. 5.31 from 1299. For a similar marking in manuscripts bound by the famous anonymous binder known as Scales Binder in 15th century England, see N. Barker, *Form and Meaning in the History of the Book – Selected Essays*, London 2003, p. 38. See also the suggestion by Gumbert Words for Codices, section 316.7) to use the term ‘centre signature’ in English to designate this marking and his comment that the cross marking in the central opening indicated that there were no missing bifolia in the quire.

⁷⁷ See the article by Mondrain, ‘Les signatures des cahiers dans les manuscrits grecs’ (above, n. 52), pp. 23-24.
Decorative Masora in transitional openings between quires
In at least three dozen dated Bibles that include decorative Masora one finds that in the transitional openings between successive quires (the verso of the final leaf in a quire and the recto of its successor), the Masora is written in a more complex decorative manner than on other pages (excepts for the beginnings and ends of books).\(^\text{78}\) Initial evidences of this form of writing appears already in early Oriental codices,\(^\text{79}\) but in the thirteenth century the custom spread to France and Germany and also to Spain. In around one third of the manuscripts the Masora is displayed symmetrically on both pages of the opening, and of these most were produced in Spain during the fourteenth and fifteenth century. Unlike the complex decorative Masora at the beginnings or ends of books, this means of accentuating the transition from one quire to the next was not textually-, but rather codicologically motivated, perhaps in order to facilitate the preservation of the codex’s order.

\(^\text{78}\) This is the subject of Dalia Ruth Halperin’s work ‘Hamasora hame’uteret be-miftahei hama’aivar bein uontresim’, M.A. thesis (in Hebrew), Hebrew University 1999/2000, and see recently, ‘Decorated Masorah on the Openings between Quires in Masoretic Bible Manuscripts’, Journal of Jewish Studies, 65 (2014), pp. 323–348. This phenomenon was already documented in Manuscrits médiévaux, e.g. I, 28 (and see the photograph on this page).

\(^\text{79}\) In MS Cairo, The Moussa al-Dar’i Karaite Synagogue, ostensibly a copying of the book of Prophets from 894/5 but without doubt deserving a date of some 100 years later (see above, chapter 1, n. 64), and MS Cairo, ibid. written in 1028 (see Codices hebraici, Part II, ms. 23).
Tables 20-22: Geo-cultural distribution of means to ensure the order of the codex

For the basis of the statistical calculations and tabulations, see the Introduction (chapter 1), above, in the section ‘General statistics of the database’ (before Table 5). The data presented below in tables 20-21 are based on the corpus of dated manuscripts that display means of ensuring the correct order of the codex and which were produced before 1500.

Table 20: The distribution of catchwords and counter-catchwords

Some manuscripts display more than one catchword method and therefore the total number of manuscripts with catchwords and the total number of manuscripts per zone are smaller than the totals received by counting them according to the discrete methods. Because the percentages relate to the number of manuscripts in the corpus, the total of the percentages exceeds 100.

<table>
<thead>
<tr>
<th>Zone</th>
<th># 1</th>
<th>%</th>
<th># 2</th>
<th>%</th>
<th># 3</th>
<th>%</th>
<th># 4</th>
<th>%</th>
<th># 5</th>
<th>%</th>
<th># 6</th>
<th>%</th>
<th>Total in Corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sefarad</td>
<td>157</td>
<td>33</td>
<td>22</td>
<td>5</td>
<td>267</td>
<td>57</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>88</td>
<td>19</td>
<td>472</td>
</tr>
<tr>
<td>Ashkenaz</td>
<td>270</td>
<td>92</td>
<td>10</td>
<td>3</td>
<td>33</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>23</td>
<td>8</td>
<td>294</td>
</tr>
<tr>
<td>Italy</td>
<td>486</td>
<td>69</td>
<td>39</td>
<td>6</td>
<td>238</td>
<td>34</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>78</td>
<td>11</td>
<td>706</td>
</tr>
<tr>
<td>Byzantium</td>
<td>58</td>
<td>31</td>
<td>4</td>
<td>2</td>
<td>150</td>
<td>80</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>28</td>
<td>15</td>
<td>188</td>
</tr>
<tr>
<td>Orient</td>
<td>75</td>
<td>33</td>
<td>6</td>
<td>3</td>
<td>119</td>
<td>53</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>8</td>
<td>225</td>
</tr>
<tr>
<td>Yemen</td>
<td>61</td>
<td>63</td>
<td>1</td>
<td>1</td>
<td>26</td>
<td>27</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>97</td>
</tr>
<tr>
<td>Unidentified</td>
<td>8</td>
<td>42</td>
<td>3</td>
<td>16</td>
<td>9</td>
<td>47</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>1115</td>
<td>56</td>
<td>85</td>
<td>4</td>
<td>842</td>
<td>42</td>
<td>28</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>245</td>
<td>12</td>
<td>2001</td>
</tr>
</tbody>
</table>
Table 21: Distribution of quire, bifolium, and leaf signatures

There are manuscripts in which signatures appear in one location in some of the quires and in another location in other quires, and therefore the total number of manuscripts that display quire signatures and their total per zone are smaller than the totals received by counting them according to the location of the signatures. Because the percentages relate to the number of manuscripts in the corpus, the total of the percentages exceeds 100.

(1) Quire signatures generally (2) Signatures at the end of the quire (3) Signatures heading the quires (4) Signatures heading and ending the quires (5) Quires signatures in Arabic words or numerals (6) Signatures at the head of a quire and at the end of the preceding quire (counter signatures) (7) Bifolium signatures (8) Leaf signatures

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total in corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td># number of manuscripts (disregarding multiple hands)</td>
<td>% percentage of the regional corpus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sefarad</td>
<td>128</td>
<td>27</td>
<td>30</td>
<td>6</td>
<td>25</td>
<td>5</td>
<td>76</td>
<td>16</td>
<td>206</td>
</tr>
<tr>
<td>Ashkenaz</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Italy</td>
<td>318</td>
<td>45</td>
<td>77</td>
<td>11</td>
<td>32</td>
<td>5</td>
<td>219</td>
<td>31</td>
<td>706</td>
</tr>
<tr>
<td>Byzantium</td>
<td>13</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>188</td>
</tr>
<tr>
<td>Orient</td>
<td>140</td>
<td>62</td>
<td>10</td>
<td>4</td>
<td>112</td>
<td>50</td>
<td>32</td>
<td>14</td>
<td>225</td>
</tr>
<tr>
<td>Yemen</td>
<td>86</td>
<td>89</td>
<td>4</td>
<td>4</td>
<td>31</td>
<td>32</td>
<td>54</td>
<td>56</td>
<td>97</td>
</tr>
<tr>
<td>Doubtful</td>
<td>4</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>10</td>
<td>0</td>
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<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>698</td>
<td>35</td>
<td>131</td>
<td>7</td>
<td>206</td>
<td>10</td>
<td>388</td>
<td>19</td>
<td>2001</td>
</tr>
</tbody>
</table>
Table 22: Distribution of marking the central quire openings

<table>
<thead>
<tr>
<th>Zone</th>
<th>Period</th>
<th>Manuscripts</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Africa</td>
<td>1001–1100</td>
<td>1&lt;sup&gt;80&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>1301–1400</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1401–1500</td>
<td>1</td>
</tr>
<tr>
<td>Orient</td>
<td>901–1000</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1001–1100</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1101–1200</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1201–1300</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1301–1400</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>1401–1500</td>
<td>14</td>
</tr>
<tr>
<td>Yemen</td>
<td>1101–1200</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1201–1300</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1301–1400</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>1401–1500</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>92&lt;sup&gt;81&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>80</sup> One manuscript where the marking appears in each of its four copyists’ section is MS St. Petersburg, Eap II B 124, the earliest codex that with certainty was produced outside of the Middle East and the oldest to survive from the zones of Sefardic bookmaking. As far as can be made out of the damaged and smeared colophon it contains, the manuscript was written in Kairouan (Tunisia) during the fifth century of the fifth millennium, i.e. between 941-1039. For a detailed description of the codex, see <i>Codices hebraicos</i>, Part II, ms.29.

<sup>81</sup> Two additional manuscripts may be included in this statistic, one from Byzantium and the other from Italy. In both, catchwords were written also at the end of the first half of the quires, i.e. in the right hand page of the central opening (see above, n. 22), perhaps in order to thus mark the quire openings in a different manner from that practiced in Muslim lands. In the third manuscript mentioned <i>ibid.</i>, written in the Orient in 1397, the central opening of the quire was marked according to the Oriental custom (the marking appears only in one corner of the opening – the lower right hand corner).