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Erratum
This digitized version of the article includes a corrected page (p. 49) sent to AJL members in November 2000 as replacement for the printed page, from which Figure 6b was omitted by mistake.

RARE BOOKS

Hebrew Codicology: An Introduction*

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Abstract: **The codex or so-called manuscript book, the precursor to the printed book, thrived in the Middle Ages and the Renaissance. The task of the codicologist is to analyze and describe the physical features of the codex, or in the words of Professor Malachi Beit-Arié, Director of the Hebrew Paleography Project at the Jewish National University Library in Jerusalem, to conduct an "archaeological examination" of a codex so that it may be correctly localized and dated. This paper explains and illustrates the most prominent features of Hebrew codicology.**

Introduction

Turning the pages of a book may seem the most routine of activities, particularly to a librarian. Yet behind that simple act lies a major historical advance in the form in which the written word was stored and transmitted. That historical advance over the scroll was the development of the *codex* (i.e., the manuscript book). We don't know who first had the clever idea of writing on both sides of parchment or of folding leaves of parchment and gluing or stitching them together. Nevertheless, the unknown creator of the codex clearly revolutionized the format of storing the written word. This format was not to be subject to so revolutionary a change until the development of printing. The study of the codex as an artifact is the province of codicology and the codicologist.

The codicologist examines the physical qualities of manuscripts (usually medieval and Renaissance), so that they may be accurately described, localized, and dated.

As such, codicology is a valuable tool to historians. For librarians, knowledge of the elements of codicology provides a greater appreciation of manuscripts, as well as the bonus of discovering the roots of descriptive bibliography. This paper reviews the points of interest in codicology, with particular focus on the study of Hebrew codices.

The field of Hebrew codicology demands thorough knowledge of the technical aspects of codex production, establishing a typology of handwriting styles (paleography), and categorizing various scribal techniques and traditions. It also requires broad knowledge of the Hebrew literature and culture that were contemporary with the period of a given codex.

Major Geo-cultural Entities

Malachi Beit-Arié, dean of Hebrew codicologists in Jerusalem's Jewish National and University Library, divides Hebrew codices into six distinct geo-cultural zones (see Figure 1):

1) *Ashkenaz*—technically Western Germany and central and northern France, but in fact extending from England to Bohemia.
2) *Orient* (Mizrah)—Egypt, Palestine, Syria, Eastern Turkey, Iraq, Iran, Bukhara, Uzbekistan.
3) *Sefarad*—Spain, Portugal, Provence, Bas-Langedoc, Morocco, Algeria, Tunisia.
4) *Italy.*
5) *Byzantium*—Western Turkey, Greece, the Balkans, and Crete.
6) *Yemen*
   (adapted from Beit-Arié, 1993a, p. 44).

These categories are the most useful and accurate way of naming a manuscript's origin and are used throughout this paper.

The Colophon

If a codicologist is observed turning first of all to the final page of a codex, you can be sure that he is looking for a colophon, a concluding statement by the scribe.[1] Scribes maintained virtual anonymity during their copying, but in the last paragraph of the codex some scribes took the opportunity to "sign off," writing their names, the names of their employers, the dates of completion, and whatever else they may have wished. (Colophons continued to exist as a feature of books in the era of printing.)

Hebrew colophons sometimes offer a treasure of information, such as genealogy, details on the (often difficult) personal circumstances of the scribe, the salary received for copying, and more. It is only from such "colophonic" evidence that we are aware that women sometimes worked as scribes. One female copyist concluded her work with the following paragraph: "I will mention the acts of the Lord's faithful love and the praises of the Lord according to all that He has bestowed upon me, . . . I, Paula the daughter of Abraham the scribe, the son of Yoab, a scion of Rabbi Yehiel of Rome, author of the *Arukh*" [an authoritative Talmudic dictionary] (Oxford, Bodleian ms. Or. Can. 89 257r). At other times, colophons can be quite standard, terse, and uninformative, lacking names or dates.

The codicologist looks for the colophon and notes its presence or absence and any special information it contains. Unfortunately for Hebrew codicologists, the majority of Hebrew codices do not contain colophons.

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1. According to most dictionaries, the word "colophon" is of Greek or Latin origin. Glaister, in his *Glossary of the Book,* explains: "The word derives from the Ionian city of that name. It was held that the Colophonians, being good fighters, tipped the scale of whichever side of a battle they fought, enabling it to finish. Hence the phrase of Erasmus 'colophonem addidi'—'I have put the finishing touch to it', and its use to describe the words at the end of the book" ("Colophon," in *Glaister's Glossary of the Book,* 2nd ed., London, 1979).
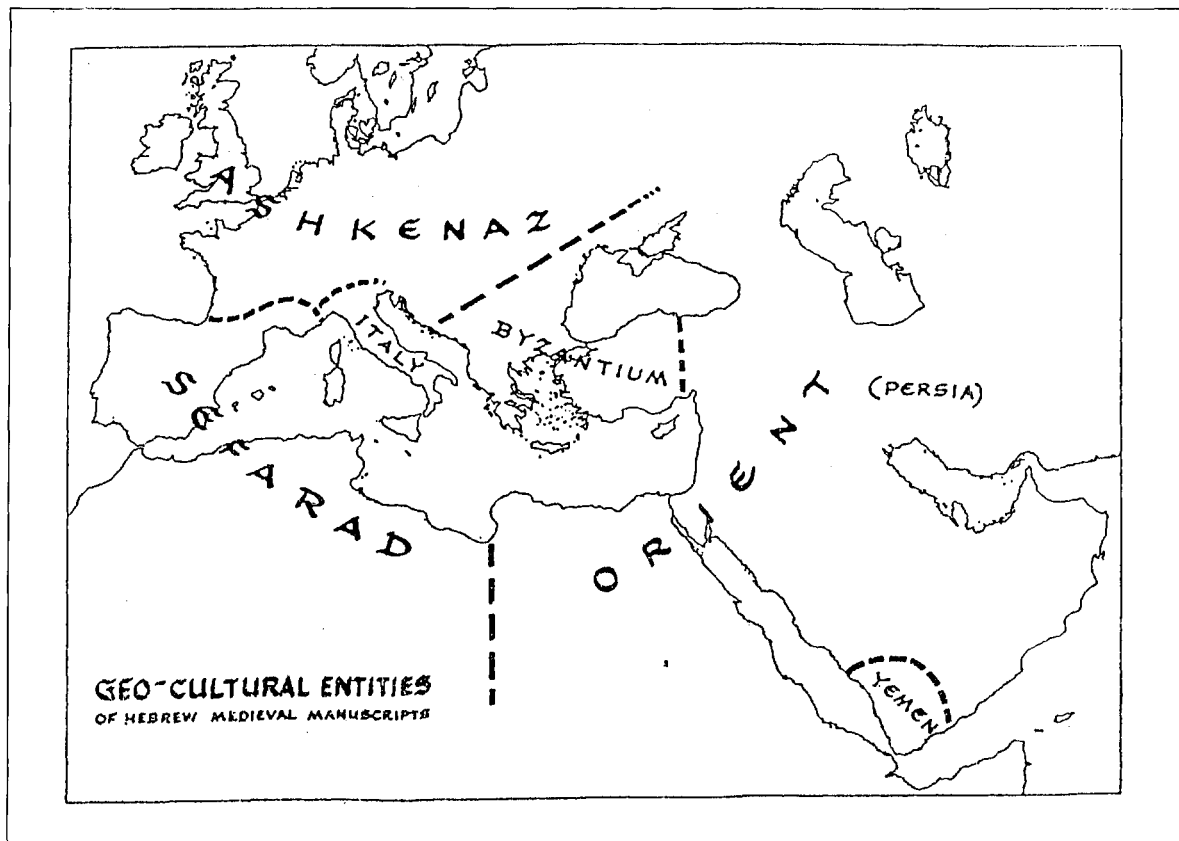
Figure 1. Major cultural zones of the Hebrew codex. (From Beit-Arié, M., *The Makings of the Medieval Hebrew Book* (Jerusalem, 1993), 44. (Reprinted, courtesy of M. Beit-Arié).

The frequent lack of literary evidence about the scribes underscores the importance of the additional codicological features that are discussed in the following sections.

Parchment Preparation

Codices were first produced on parchment. To prepare parchment, the skin of a newly slaughtered calf or goat was washed, soaked in lime, unhaired, scraped, and washed a second time. The wet rubbery pelt was then stretched evenly on a frame, and subsequently scraped over and over while dusted and rubbed with chalk and pumice until the correct thinness was achieved (Avrin, 1991, p. 213).

The hair-side of parchment, with its follicles and traces of hair, has a rough texture and may be a shade darker than the flesh-side, which is smoother, glossier, and often brighter. Different finishing processes produced various types of parchment which may guide the codicologist in localizing a manuscript's origins. Franco-German parchment of the mid-thirteenth century provides a historical line of demarcation. Until the middle of the thirteenth century, manuscripts produced in Ashkenaz appeared with the distinct features of the two sides clearly noted. In 1253, a new technique of finishing (apparently a more effective form of scraping) produced a new type of parchment in which the hair-side and flesh-side were "equalized," that is, the hair-side showed no traces of hair. Oriental parchments appear equalized, but unlike the fine but slightly suede-like texture found in Ashkenaz, Oriental parchment had a glossy shine even on its hair side. Italian and Sefardic parchments, in contrast, usually retained their natural appearances. (Beit-Arié, 1981, pp. 21–26).

Papermaking

With the introduction of paper in the Orient and Western Europe, parchment was to be replaced by paper in many codices. Paper-making began in China (104 C.E.) and then spread to Muslim countries (751 C.E.) before entering Europe (circa 1085, in Spain) along the trade routes. ("Papermaking," *Glaister's Glossary of the Book*, 2nd ed. London, 1979). Handmade paper was fabricated by taking fibrous materials such as rag linens, soaking and beating them to a pulp, and pouring the "pulp slurry" onto a wire mesh bound by a wooden frame.

Pre-watermarked papers of Oriental and Occidental origin can be distinguished by noting the differences in their morphologies (internal structure). In the East, mat-like molds were made from bamboo or other plant and organic fiber, but in the West, metal wires were strung in the form of a tight net. Because less fiber clung to these networks, faint lines called "laid lines" and "chain lines" appeared on the sheet of paper. In Eastern paper, the chain lines are faint or do not appear at all, whereas in the West the chain lines are more distinct, with consistent symmetrical patterns.

Watermarks, employed almost exclusively in the West, began to appear in 1282. These are created by stitching and knotting additional wires to the basic wire mold in the form of recognizable figures. The codicologist traces the watermark in a paper manuscript and compares it with watermark catalogues, notably Briquet's classic, *Les filigranes,* in which more than 16,000 water-
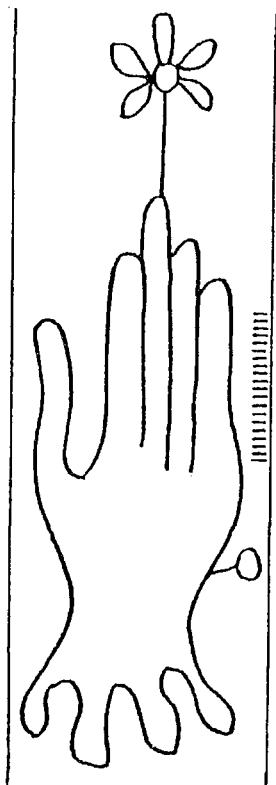

11137   (1498)

Figure 2. Briquet's reproduction of a hand motif in a watermark. Note the chain lines and their position. The number to the left is the reference to the companion volumes; the right-hand number (added by the editors) is the year the watermark was first used. This watermark tracing from Briquet's *Les filigranes* (IV, no 11137) assisted in rectifying the date of a Hebrew codex in the Bodleian Library, Oxford.

Briquet traveled extensively through Europe in search of the origins of paper. As he was struck by blindness, *Les filigranes* was published by his family in 1907 in Geneva. A pioneer work in paper history, it inspired a new category of research tool, spurring numerous monographs by paper societies throughout the world.

mark reproductions are documented with data on a given paper's city, archive, or even paper mill of origin (see Fig. 2).

Ruling Techniques

In manuscripts, ruled lines were often drawn across the page in order to guide the hand of the scribe and create an orderly format for the page. To ensure straight ruling, tiny holes were pricked along margins (outer, inner, upper, and lower), so that scoring with a ruler could be guided from hole to hole.

In Talmudic times the term for ruling was *sir ṭuṭ,* meaning "to make grooves." The earliest known instrument for ruling in Western Europe was the hard point, an instrument producing thin grooves on the surface of parchment. The hard point was later supplanted by the lead pencil in guiding Latin and, eventually, Hebrew manuscripts. Ashkenazic and Provençal rabbis, however, did not universally favor this innovation (probably because of the color traces it left, detracting from the pages' text). Rabbi Barukh of Worms (*ca.* 13th century) ruled:

> One can score with a *ḳaneh* (reed), and I heard from Rabbi Isaac ben Samuel not just a *ḳaneh* but also a knife—to the exclusion of pencils and coins whose ruling causes coloring (*Sefer ha-Terumah,* 65a).

In Northern Italy, ruling techniques were more daring. There, from about the year 1435, horizontal lines were ruled with a light-colored ink, while vertical margins were drawn with a pencil. Perhaps the most interesting ruling technique is the *mastara*—a board employed for ruling paper in Muslim lands, as described by Beit-Arié: "Cords were threaded into grooves, forming ridges corresponding to the horizontal and the vertical bounding lines. The scribe placed each leaf of the manuscript on the board and rubbed with the thumb along the covered threads, which consequently left their impressions on the leaf" (1981, pp. 72–86).

Quire Appearance and Composition

The quire, a collection of a certain number of parchment or paper sheets placed one on top of the other and folded vertically in the middle, is a fundamental codicological unit. In Europe, parchments were placed hair-side next to hair-side and flesh-side next to flesh-side, so that at whatever place the codex was opened the appearance of the open pages would be uniform. This matching is known as Gregory's Law, after Caspar René Gregory, the scholar who first noted

this consistent practice in 1879 (Avrin, 1991, p. 213). Very early Oriental Hebrew manuscripts do not follow Gregory's law, and the lack of uniformity is a distinct sign of a non-European codex. Another typically Oriental feature is starting each quire on the flesh side, whereas in Europe it was common to begin on the hair side.

The number of sheets per quire is called *quire composition.* Although four folded sheets (eight leaves) was a popular composition in Western Europe, a closer look at the quire composition of Hebrew manuscripts reveals distinct geo-cultural traditions.

In Ashkenaz, four folded sheets were used. Scribes writing in Italy adapted the typically Italian composition of five folded sheets per quire, except for paper-parchment combinations, in which compositions varied. In Sefarad, although four sheets was a common pattern, three were used in Toledo, and Sefardic paper quires usually consisted of six sheets. In Byzantium, both parchment and paper were folded in fours but, gradually, starting in the 13th century, the number rose to six-sheet quires. Sandwiching paper between outer and inner sheets of parchment was never practiced in Ashkenaz, but was done in Sefarad and Italy and was very common in Byzantium. Although rare, some Hebrew manuscripts contain as many as 11 to 14 folded sheets per quire (Beit-Arié, 1981, pp. 41–50).

Maintaining Order

Several systems were used to ensure that the loose quires remained in the correct order in the codex when they were delivered for binding. The systems consisted of markings designed to instruct and guide the binder. A hierarchy exists in which the most basic ordering system attempted to maintain a sequence between quires. Gradually, scribes and binders devised systems to maintain internal order within a quire.

The earliest Oriental Hebrew Bibles, dating from the 10th century, contain only the slightest signs to keep order and, as Mordechai Glatzer points out, the scribes of biblical codices were reticent to include anything beyond vowel points, accents, and the *mesorah* (the code or system of spelling annotations). This deference was an overflow from their adherence, in various degrees, to the laws of writing a Torah scroll, in which any signs are forbidden. In the famous Aleppo Codex (*ca.* 10th century), only a faint graphic sign (a tiny circle) was marked in the middle sheet of a quire, perhaps so the binder would

not fold the quire in the wrong direction (Glatzer, 1989, pp. 198; 257).

Eventually Hebrew scribes mellowed, for the laws of writing a Torah scroll do not actually apply to the codex form, and the scribes adopted various systems (both from Latin codices and from their eastern neighbors) to ensure the order of a manuscript. By the middle of the 11th century, Hebrew scribes began to numerate quires, called *signatures* (at the beginning or the end), and to write

Animal illustrations alongside the catchwords were common in Ashkenaz, and Byzantine manuscripts are occasionally distinguished by catchwords inside a bizarre-looking bird (Beit-Arié, 1981, pp. 50–68), as can be seen in Figure 4.

Scribal Techniques

How many of us recall our earliest scribal enterprises, copying from the blackboard and, when reaching the end of the line,

How did Hebrew scribes solve the problem of left-margin justification? Their methods varied with location and time period. Both Oriental and Ashkenazic scribes wrote graphic symbols, truncated letters as line-fillers (see Figure 3 and Figure 6a, line 3). Sefardic scribes sometimes squeezed final letters. A typically Italian device was to divide words at the ends of lines (without hyphens), while Yemenite scribes devised their own system of dividing final words of a line and wrote a slightly diagonal full stroke as a hyphen (see Figure 5). Unique to Ashkenaz was the convention to space exceeding letters outside of the left margin (see Figure 6a) or to write final letters vertically upward. Only in Sefarad were letters placed slightly above the end of the line, and in Yemen, Persia, Bukhara, and the Balkans scribes wrote exceeding words diagonally (Beit-Arié, 1981, pp. 87–103). See Figure 6b.

Hebrew Paleography

The study of Hebrew scripts is not discussed in this paper, but certainly a manuscript cannot be dated or categorized without paleographical identification. A major point is that Hebrew scripts fall into the geo-cultural zones outlined above, and are subdivided into three modes of writing: square, semi-cursive, and cursive.

Although a script may have a stereotypical handwriting, the codicologist will exercise extreme caution not to identify or date a manuscript on the basis of handwriting before he has analyzed the codicological evidence outlined above. Immigrant scribes residing in 15th-century Italy provide examples of the retention of personal techniques (such as distinctive line fillers) while adopting local practices such as quiring (i.e., quire composition) first encountered in the new land of abode. To make things more confusing for the Hebrew codicologist, Malachi Beit-Arié cites cases where immigrant scribes adjusted their handwriting (e.g., from Sefardic to Italian) to meet local needs (Beit-Arié, 1981, pp. 104–110).

Conclusions

This brief survey has touched on several of the most outstanding general and Hebrew codicological features. Full codicological analysis requires the description of numerous additional features, such as ink appearance, parchment thickness, dimensions of both the writing material and the writing area, number of lines, forms of writing the Tetragrammaton (God's name), abbreviations, ligatures, and more.

By classifying a manuscript according to the features discussed here, the codicologist
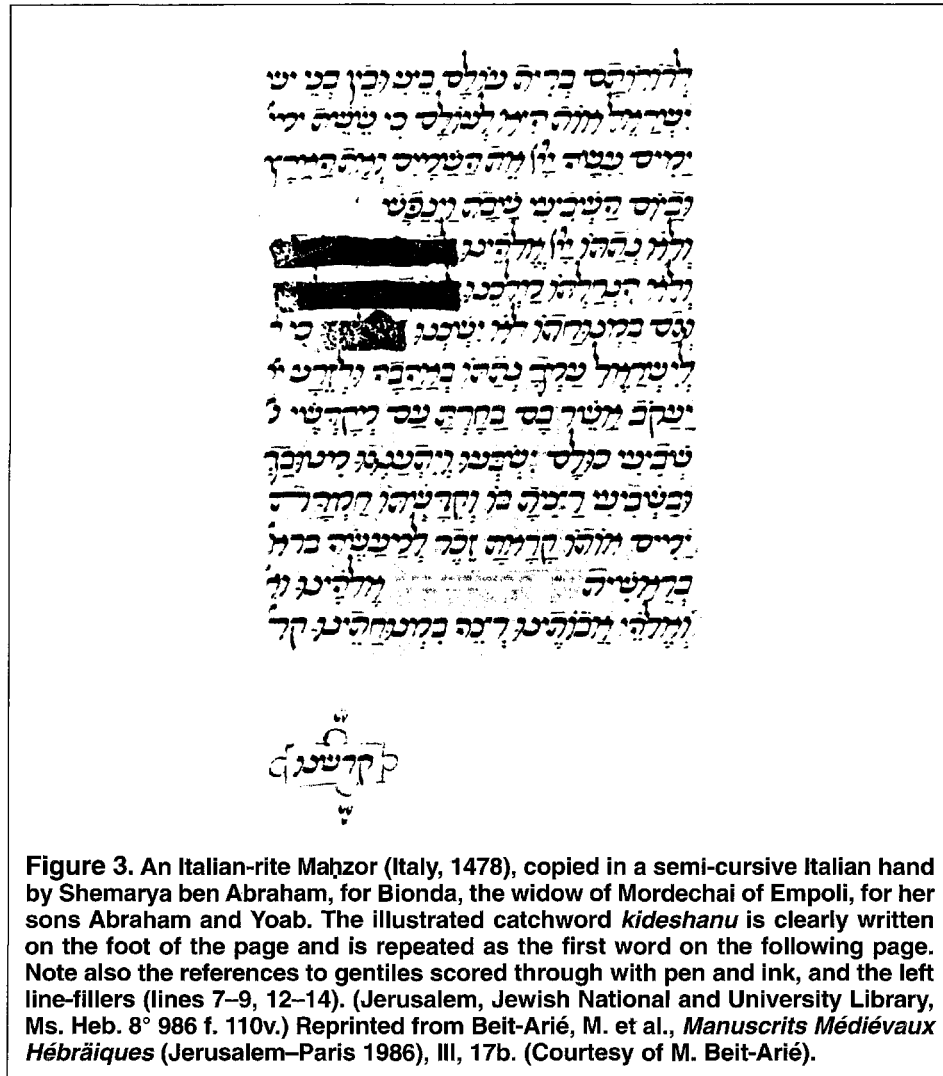
Figure 3. An Italian-rite Maḥzor (Italy, 1478), copied in a semi-cursive Italian hand by Shemarya ben Abraham, for Bionda, the widow of Mordechai of Empoli, for her sons Abraham and Yoab. The illustrated catchword *kideshanu* is clearly written on the foot of the page and is repeated as the first word on the following page. Note also the references to gentiles scored through with pen and ink, and the left line-fillers (lines 7–9, 12–14). (Jerusalem, Jewish National and University Library, Ms. Heb. 8° 986 f. 110v.) Reprinted from Beit-Arié, M. et al., *Manuscrits Médiévaux Hébräiques* (Jerusalem–Paris 1986), III, 17b. (Courtesy of M. Beit-Arié).

catchwords—the first word of the anticipated quire, placed at the foot of the preceding quire (see Fig. 3).

Catchwords at the foot of a page were generally written horizontally, but unusual styles offer codicological clues. For example, Oriental scribes wrote catchwords diagonally downwards, and only Ashkenazic and Italian scribes wrote them vertically upwards.

devising various squeeze techniques? Hebrew scribes anticipated the same problem and developed their own solutions. Unlike Latin scribes, why did Hebrew scribes insist on justifying left margins? Probably for religious reasons and, perhaps, on aesthetic grounds as well. Early Hebrew codices of the Bible resembled a Torah scroll, and such imitation was carried over to non-religious works.

Figure 4. Catchword in a bird design. Salonika, 1329 (Ms. Leipzig, Karl-Marx Universitätsbibliothek B.H. 13 fol. 138v). Reprinted from Beit-Arié, 1981, pl. 12, courtesy of M. Beit-Arié.

Figure 5. The final strokes on lines 1, 2, and 7 exemplify a Yemenite method of hyphenation (Ms. Jerusalem, Mosad HaRav Kook 302, fol. 138v). Reprinted from Beit-Arié, 1981, pl. 25, courtesy of M. Beit-Arié.
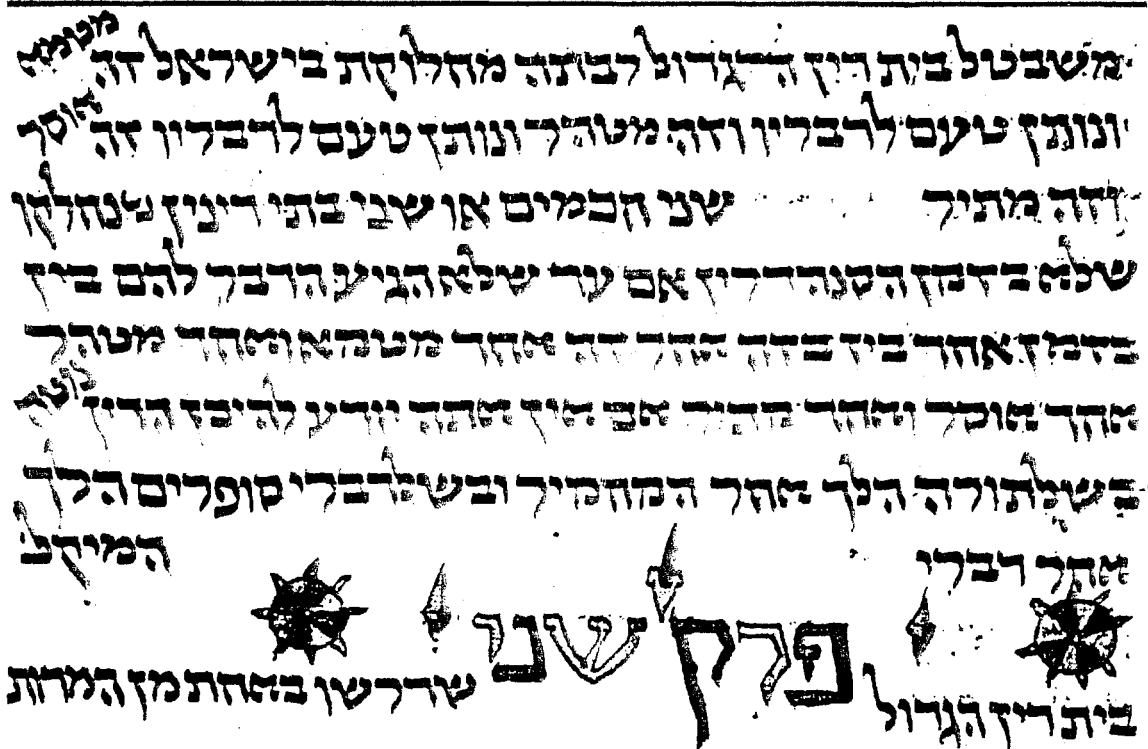
Figure 6. Contrasting methods of line justification. Fig. 6a contains a segment from an Ashkenazic Maḥzor in which the two excess letters (line 4) were written in the margin. Note also, the graphic line-filler on line 3 (Ms. Munich, Bayerische Statsbibliothek Cod. Hebr. 200, fol. 7v). In Figure 6b, a Yemenite codex of Maimonides' code, the excess words on lines 1, 2, and 6 are written diagonally (Ms. Jerusalem Jewish National and University Library Yah. Ms. Heb. 2 fol. 71v). (Both figures are reprinted from Beit-Arié, 1981, pls. 26 and 29, courtesy of M. Beit-Arié).

designs a scientific tool for the most accurate and responsible identification of the codex. The rewards of his labors are the possibility of "separating hands," i.e., noting that more than one scribe copied a given codex and, in addition, the potential to reconstruct damaged quires of a codex. Numerous scholars engaged in textual study are among the beneficiaries of the painstaking groundwork that codicologists accomplish.

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Glatzer, Mordechai, "The Aleppo Codex: Codicological and Paleographical Aspects," *Sefunot,* New Series 4 [19] (1989), Jerusalem: Ben-Zvi Institute for the Study of Jewish Communities in the East, 1989, p. 167–276.

[A model, state-of-the-art codicological and paleographical analysis of the State of Israel's most famous codex of the Bible, The Aleppo codex (10th century). The author analyzes every facet of the book, including the codicol-

ogy of the *Mesorah* and *Nikud* (punctuation).] In Hebrew.[2]

Recommended Reading (Hebrew)

Sirat, Colette; Shalem, L. (ed). *Min ha-ketav el ha-sefer: hatsatsah el 'olam kitve ha-yad ha-'Ivriyim shel yeme ha-benayim,* [From Script to Book: A Glance at the World of Medieval Hebrew Manuscripts]. Jerusalem: Keset Hafaqot, 1992.[3]

Founder of the Hebrew Paleographic Project in Paris as well as an eminent codicologist and scholar of Jewish philosophy, the author takes the reader through each stage of the Hebrew codex's development. The author's transcriptions of numerous manuscripts enable any reader of Hebrew to practice reading medieval and Renaissance Hebrew scripts.

Steinschneider, Moritz. *Hartsa'ot 'al kitve yad 'Ivriyim* [Lectures on Hebrew Manuscripts]. Trans. Israel Eldad. Ed. A. M. Haberman. Jerusalem: Mosad Harav Kook, 1965.[4]

Appeared also in *Areshet,* Vol. 4. Jerusalem: Mosad Harav Kook, 1966, pp. 53–142.

Based on lectures delivered by Steinschneider in Berlin in 1860. These lectures may constitute the first attempt by a Jew to describe the basic features of general and Hebrew codicology.

Yardeni, A. *Sefer ha-ketav ha-'Ivri: toldot, yesodot, signonot, 'itsuv* [The Book of Hebrew Script]. Jerusalem: Carta, 1991.[5]

By an accomplished graphic artist, Hebrew typographer, and scholar of Hebrew and Semitic languages, this book is replete with schematic diagrams tracing the historical development of the Hebrew script. Includes instructions for students of Hebrew calligraphy, and a bibliography of Hebrew paleography.

Recommended Reading (English)

Beit-Arié, Malachi. *Hebrew Manuscripts of East and West: Towards a Comparative Codicology.* London: The British Library, 1993.

A transcription of the 1992 Panizzi Lectures held at the British Museum. This is an opportunity to practically "hear" the most seasoned Hebrew codicologist discuss the place of the Hebrew codex in Jewish and general culture, its symbiotic relationship with other codicologies, a characterization of medieval Hebrew scripts, and the technical and graphic development of the early Hebrew book.

Beit-Arié, Malachi. "How Hebrew Manuscripts Are Made," in Leonard Singer Gold (ed.), *A Sign and a Witness* (New York: The New York Public Library; Oxford: Oxford University Press, 1988), pp. 35–46.

Richler, Binyamin. *Hebrew Manuscripts: A Treasured Legacy.* Jerusalem and Cleveland: Ofeq Institute, 1994.

The author is the director of the Institute of Microfilmed Hebrew Manuscripts of the Jewish National and University Library in Jerusalem. The book contains clear and precise descriptions of codex production; with generous color plates. Includes a short history of famous Hebrew manuscript collections and a chapter on the Cairo *genizah,* by Professor Robert Brody of the Department of Talmud, Hebrew University [see a related article by Brody in this issue-Ed.] An excellent choice for Judaica libraries.

Rouse, Richard H. "Manuscript Books, Production of." *Dictionary of the Middle Ages.* Ed. Joseph R. Strayer. 13 vols. New York: Charles Scribner's Sons, 1987.

Sarna, Nahum. Introduction. *The Pentateuch: Early Spanish Manuscript (Codex Hillely). From the Collection of the Jewish Theological Seminary, New York.* [Jerusalem:] Makor, n.d.

One of the finest surveys describing the development of the Hebrew and Latin book from papyrus and parchment scrolls to the codex.

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