than by any earlier generation, and — more important still — without the tiring effort of writing. In fact, many scribes had complained about their fatiguing work. In the incipit or explicit of several manuscripts the following phrase is repeated: «Three fingers write but the whole body works». This exclamation was used already in a manuscript of the eighth century (Monumenta Germaniae Historic, Leges III, 589). I quote some more from the lament of the unknown scribe:

O quam gravis est scriptura: oculos grayat, renes frangit, simul et omnia membra contristat. Tria digita scribunt, totus corpus laborat. Quia sicut nauta desiderat venire ad proprium portum, ita et scriptor ad ultimum versum. Orate pro maritirio indignum sacerdotem vel scriptorem sed habentem Deum protectorem.

«Would you have been all that pleased about [the invention of printing], if you’d happened to be a scribe then?» When Ibsen wrote this question in 1877, it was obviously meant rhetorically. However, asked whether they approved of the new craft, most scribes in the era of Gutenberg would have replied with a definite «Yes».

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margins practised by Hebrew scribes could best be grouped in the following
two categories:
— solutions that do not interfere with the integrity of the last word;
— solutions that do not refrain from dismembering the last word in
various ways.

The letters used as numbering thereafter are used also to designate the
related examples in the illustrations.

Devices of the first group (final words left intact).

A. Inserting graphic fillers designed in various shapes (partly in forms
of letters, complete or stunted [A']), usually conforming to regional types. A
widespread practice in the East and the West, employed in 69% of the dated
codices.

B. To the graphic filler device should be related the practice of filling up
the line by the first letter of the first word of the next line. Indeed such a
practice is apparently part of the most common practice of anticipating next
words (see in the second group in detail), but we believe that the confine-
ment of this sub-practice to single letters alone makes it similar to a graphic
filler (particularly when these single letters are not marked), as both scribe
and reader would have been aware of the graphic « filling » function of any
meaningless solitary letter in the Hebrew (or Arabic transcribed in Hebrew
characters), and could hardly conceive it as dismembered part of a word.
The single anticipating letters are found in 11% of the copies.

C. Dilated or constricted last (or penultimate) letters. The commonest of
all practices, to be found almost in all medieval manuscripts. The fact that
only 0.75% of the dated manuscripts were found to avoid this practice
demonstrates that the device is inherent in the sheer usage of the Hebrew
script. The stretching of the last or penultimate letter was performed in two
ways — either the letter as a whole was extended (sometimes even magni-
fi ed), in one stage, or a « tail » was attached to one of its strokes following
the completion of its normal tracing, thus making it reach the left margin-
line.

D. Minimising the size of last letters, particularly when they exceed the
margin, or switching to a current-type script so as to reduce the size of last
letters and make them fit into the line. These devices can be classified to-
gether with the previous practice.

E. Spacing the last letter of the last word, or leaving extra space before
the last word, or the graphic filler, or the anticipated next word.
F. Filling the space left at the end of the line with the following word written slantwise (mostly downwards), thus enabling it to fit somehow the margin. The practice was common only in the Near East, where it is witnessed in 57% of the manuscripts (77% in the fifteenth century; 65% in Yemen, 91% in the fourteenth century), and in Byzantium, where it is found in 31% of the dated codices.

These solutions of non-interference with the integrity of the last word demand from the scribe a certain amount of foresight, watchfulness and alertness, even a quick or instinctive calculation or assessment while approaching the left margin. Before reaching the vertical boundary line the scribe will have to estimate the space left compared to the length of the next word and make an ad hoc decision whether to continue the fluent, regular, copying and fill up the assumed space left with one of the filling-up devices (such as inserting graphic fillers or a single letter taken from the beginning of the following word), or leave a blank space before transcribing the word, or space its last letter, or extend it, or compress it, or rather decide to protrude into the margin while writing exceeding letters in a small script, or avoid exceeding by writing the word diagonally. These solutions undoubtedly provide comfort of reading, hardly hinder the fluency of reading by confusion and misreading, while achieving an aesthetic presentation of the written space. On the other hand, they seem to increase the input of scribes and copyists in time, energy, concentration and even calculation, and are surely time consuming and costly. Applying the approach of the bilan énergétique to these non-dismembering justification practices reinforces the obvious linkage between the copyist's greater input in line management and the better legibility of the text, while clearly demonstrating the preference for the fluency of reading over the fluency of copying, resulting in higher costs of production. It seems that the contradicting financial interests and the interests of legibility are not balanced. However, we should review the practices of the second type of line management, and particularly the proportions of both types employed by the same scribes before passing any judgement on the energetic balance in Hebrew bookwriting.

Devices of the second group (solutions that involve dismembering or bisecting the last word).

G. Anticipating the next word — filling up the space left at the end of the line by writing as many letters of the last word as the boundary margin allows and then re-writing the complete word at the beginning of the following line. Sometimes, particularly in France and Germany, a scribe would even write all the letters of a long word but the last one, and then rewrite the entire word at the beginning of the next line. In about half of the
copies produced everywhere there is a tendency to write certain last letters of the anticipating word-portion in a stunted shape, omitting one or two strokes. This time- and space-consuming custom was practised in all geocultural areas since the earliest extant Hebrew codices and can be found in 63% of the dated manuscripts. Naturally the distribution of the practice is not chronologically or geographically even. In France and Germany, for instance it is employed in 86% (91% in the thirteenth and fourteenth centuries) of the codices, while in the Middle East (excluding Yemen) only in 37% (47% in the fifteenth century).

Formally this most common device can be indeed classified with the first group, since the word-dismembering is artificial and the integrity of the word is restored in the next line; but from the viewpoint of reading ease it is obvious that such a device may hinder the fluency of reading and confuse the reader, who may interpret the dismembered part as a word by itself, in spite of the frequent marking of the last letter by a dot, usually identical in shape to the abbreviation (shortening) mark. Consequently, this marking, meant to indicate cancellation, or alert the reader from being misled by the layout trick, could have easily been mistaken for an abbreviation. Indeed, the custom to amputate the last letter can be understood as indication that the anticipating letters should not be confused with a word, though certain amputated final letters are employed in shortening of words.

For the opposite reason we included in the first category of practices the similar reduced practice of filling up with only the first letter of the anticipated word, since it is obvious that the reader would not be confused by a single letter (Hebrew has no independent single-letter lexemes) and would regard it naturally as a graphic filler. If we are justified in this differentiation, the small percentage of the employment of a single-letter filler should be subtracted from the above-mentioned statistics. Within the one-letter practice one is entitled to differentiate between those scribes who marked the single-letter fillers by a dot (7% of all copies) and those who did not mark them at all (4%). It seems that only unmarked single-letter fillers should be classified as non-dismembering graphic fillers, as the marked ones could have been perceived as one-letter abbreviation (or a Hebrew numeral).

H. Placing exceeding letters above the end of the part of the word-segment written within the justification. The custom is noticed in 33% of the dated copies (15% in the thirteenth century, 40% in the fifteenth century; 58% in Iberia, Provence and the Maghreb, 68% in the fourteenth century; but, only 2% in Germany and France and 4% in Yemen). There was a natural tendency to write the upper letters of these «double-decker» words in a smaller size. In more than a quarter of the manuscripts the practice is confined to the last letter which is written on top of the penultimate letter.
Despite the fact that the two parts of the word are not really separated, the word is not written in a linear manner and is visually bisected.

I. Writing exceeding letters vertically, usually upward, along the margin line. The device was not widely practised. It is found only in 9% of the corpus (14% in the Franco-German areas).

J. Writing exceeding letters at a distance in the margin. A considerable space is left between the two parts of the bisected word. Readers can very likely miss the marginal completion of the word, particularly when the device is applied in one-column copies or in the margins of the second or the third column in multi-columns layout. This line management stratagem is employed in 15% of the dated copies in general, 38% in Ashkenaz (17% in the thirteenth century, 50% in the fifteenth century) but less than 2% in Yemen.

K. « Lexitomy » — the commonest practice of Latin and Greek scripts of dividing words between the end of the line and the head of the following line is present only in 9% of all the dated manuscripts, and significantly only in two territories: Italy, where about half of the extant dated copies were produced, and Yemen. In Italy it can be observed in 10% of the copies, while in Yemen word-division was practised in 36% of the codices. However, in about half of those manuscripts produced in Italy only proclitic morphemes, such as the definite article or various prepositions (up to three letters, but mostly just one) attached to the Hebrew word, were cut off and conspicuously marked by infralinear vowel signs. This strictly grammatical bisection, coupled by the distinct marking, allows us to doubt whether such a variant should be classified within the dismembering solutions or rather with those that preserve word integrity. Grammatical bisection is noticed also in Yemen, but mostly in texts written in Arabic (in Hebrew script), in which only the definite article al- is likely to be separated from the rest of the word. The elimination of the this variant reduces the practice of word division among Hebrew manuscripts to 5%. In grammatically unconditioned word bisection in Italy and elsewhere the first separated part or both dismembered parts were usually marked by a hyphen sign in the margins. In all these manuscripts the practice is employed in a very limited number of lines, and in part of the pages (or columns) only.

L. Abbreviating final words is also not widely employed. Abbreviations in Hebrew manuscripts are always confined to a mere shortening, usually cutting off the final letter, or the two last letters, mostly the plural or female morphemes, but never contracting words. Moreover, the same abbreviated words may occur within the line. Though in 15% of the dated manuscripts shortened words were documented, we believe that in many copies such abbreviations were not employed more frequently at the end of the lines than within the lines. The very fact that no elaborate abbreviation system was ever developed in Hebrew books obviously reflects the preference for legibility.

At first glance, line management of the second category requires from the scribe and copyists less input and attentiveness and enables him to increase his copying speed. Consequently, obeying the negative correlation between speed of copying and legibility, the reader is bound to invest more time and attention in his activity, since the dismembering stratagems of the scribe interfere with the fluency of reading, breaking its pace and sometimes even obstructing the understanding of the text with various obstacles. The comfort of copying results in most cases in the discomfort of reading ends of lines, but also in cheaper costs of production. However, a detailed observation cannot ignore several contradicting facts: the most common device of anticipated letters does not require foresight, nor does it impede copying fluency, but increases the copying load and the writing space; the unnatural two-floor device, the distant conclusions in the margin and surely the less frequent device of vertical writing must have hindered to some degree both copying and reading. It seems that apart from applying lexitomy and shortening, both practices employed only in small portions of our witnesses, even the scribes did not gain considerably from using dismembering devices. They certainly invested less attention and alertness, but the regularity of copying, and therefore its fluency, was probably restrained.

Before attempting to analyse and understand these data we should check whether the two categories of stratagems are applied together in the same copy and what is the extent of manuscripts using only one kind of devices. Without supplying complex statistics, which involve sophisticated retrieval procedures, we can state confidently that many scribes mix devices of the two categories. Most scribes manipulate and blend several devices, sometimes up to six! As for combinations, alternatives and exclusive employment of one category alone, at this stage we can provide statistics regarding those manuscripts which refrain from using any dismembering means, in other words, those which clearly favoured comfort of reading over comfort of copying. The percentages exclude the anticipation practice, which we regarded as an artificial dismembering, but include anticipation of single letters. In general, such clear declaration of preference and demonstration of interest is found in 42% of all the dated codices; 44% in the Sephardic zone; 16% in the Ashkenazic zone; 37% in Italy; 52% in the Byzantine zone; 65% (74% in the twelfth century) in the Near East; 48% in Yemen. The remaining percentages do not necessarily represent exclusive employment of the dismembering practices of the second category. Many scribes, as was
emphasised above, applied devices of both categories, and almost all of them used the dilatation/compression and, to a lesser degree, the various spacing means as well as graphic fillers, all of which imply a certain amount of forethought and reduced speed of writing. Thus, these figures are striking indeed. They suggest that the fluency of reading was clearly preferred over production input in almost half the Hebrew surviving dated codices, while most of the rest exhibit mixture of scribes' and readers' interests. The case of the Franco-German manuscripts needs further inquiry. No doubt the massive usage of the anticipating letters reduced considerably the percentage there. If we exclude this artificially dismembering device, as its classification within the second category may be debatable despite its apparent obstruction for the reader, and remove it from our statistics, the manuscripts that avoid separation between word letters will comprise an overwhelming majority of 72% in general (53% in Ashkenaz).

The energetic imbalance in Hebrew line management which seems to be dominated by legibility rather than economical consideration and was shared by professional scribes and owners-copyists alike, is reinforced by the remarkable phenomenon of applying variform line-endings. Contrary to his Latin and Greek counterpart, the Hebrew scribe not only employed a stunning multiplicity of stratagems, but tended to constantly change, combine and mix them. Such a diversified management required more attention and inventiveness, decreased the regularity of copying, surely slowed down its pace and demanded a greater input in book production. On the other hand, the reader seems again to profit from the changing manifold line-ending solutions, as the repetition of the same (or a limited choice of) device — demanding a lesser input on the part of the scribe — may have damaged the reading comfort by the monotonous appearance of the lines.

It should be stressed that all our figures relate to the amount of manuscripts showing this or that practice. So far we have not carried out any survey on the frequency of each device within a codex, or the ratio of justified lines and the total number of written lines. Such surveys will no doubt cast more light on the dynamics of bookwriting. Likewise, we should also check systematically if modes of script, levels of quality, extent of use and textual genres of the texts copied influenced the choice of practices and their distribution. As was indicated, we did not notice any difference in line management between copies produced by hired scribes and user-produced books which amount to half the dated manuscripts. Examination of the devices applied in Biblical manuscripts, for example, shows no great difference from the general tendency. These usually de-luxe copies exhibit larger or similar extent of employment of the devices of the graphic fillers, anticipating letters and exceeding letters spaced in the margin, while showing a lesser use of the «double-decker» practice, an even greater
decline in shortening, a very limited use of slanting final words, and a com-
plete avoidance of lexitomy. The restraint in interfering with the integrity of
the last word in the sacred text as against the proliferation of the anticipating
device is illuminating. It may convey that anticipating letters were not
considered an obstruction to reading, and what is more important, to the
faultless transmission of the Scriptures, and that this practice should indeed
be included with the first, non-dismembering category.

Notwithstanding our findings on the clear supremacy of the interest of
reading in the management of Hebrew book production, we cannot escape
from looking for another, non-functional, non-economical consideration or
impulse which guided or inspired Hebrew scribes and readers in their ob-
sessive use of multiple justification practices. It seems that their prime
stimulus was neither financial restrain, nor comfort of reading, but rather
aesthetic — the pursuit of even lines by all means, the buds of which can be
traced already in the Dead Sea Scrolls, more than two thousands years ago,
where some of our devices were hesitatingly used. This aesthetic drive was
perhaps promoted by some of the strict religious regulations of writing the
ritual Pentateuch scroll, forged in late antiquity in Palestine and Babylon
and retained to this day. This artistic concept of book (or roll) design was
very early cultivated into a diversity of prevalent devices and fashions.
Many of them were shared by different areas, some of them were developed
only in certain territories, while most shapes of the graphic fillers were
conform to regional types. All scribes had at their disposal a stock of
traditional devices practised in their area and time from which they would
draw their individual choice. Multi-hand manuscripts reveal that usually
there are some differences in the combinations of practices among scribes
who work together, and conspicuously in the form of the filler, so much so
that these personal variances serve as a most convenient tool for distinguishing
between different hands which share the copying and a similar script.
Within the stereotyped regularity and conventions of book production, line-
ending stratagems provided the Hebrew scribe the chance to express his
individuality and creativity. It seems that by the end of the twelfth century,
or even earlier in some areas, scribes were not so much concerned with the
functional purpose of the devices as with their instrumentality for demonstrat-
ing their craftsmanship, inventiveness and virtuosity. French and German
scribes who would frequently apply at the end of one line the combined
devices of spacing, filling up with letters of the anticipated word, amputating
the last one of them and inserting a graphic filler at the end surely could
have replaced the four different devices by one practice alone, if their main
concern had been to justify the margin as quickly as possible and not to
exhibit their scribal mastery. Similarly, the continuous switches from one
single practice to another can also be explained by the scribes' urge to dis-
play their penmanship skill. In Yemen the slanting of final words lost its
original function when the practice was employed in the majority of the page
lines, turning into a sheer conventional decorative mean.

Thus, dialectically, scribes themselves, trapped in a powerful tradition,
eager to manifest the diversity and the proficiency of their performance,
impaired their copying pace and increased scribal input, but also damaged
the ease of reading. In general, considerations of fluency of both writing and
reading, and economic and ergometric interests of both production and con-
sumption seem to be suppressed in Hebrew manuscript books by aesthetic
instinct and tradition, inherited multiple fashions and scribal virtuosity.
Hebrew manuscripts, in short, call for a modified theory, or premises, of
« energetic balance ».

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