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COLUMN LAYOUT IN OXYRHYNCHUS LITERARY PAPYRI: MAAS'S
LAW, RULING AND ALIGNMENT DOTS

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Column Layout in Oxyrhynchus Literary Papyri: Maas's Law, Ruling and Alignment Dots

A prominent difference in the aspect of columns in Greek literary papyri and that of columns in the *Wall Street Journal* is the vertical tilt or slant which we usually find in literary rolls. That is, the left edge of the column more often than not slopes leftwards down the page so that the initial letters at the foot of the column begin somewhat left of initial letters at the top of the column. One might add that the right edge of the column shows a parallel development, such that the final letters at the foot likewise end somewhat left of the final letters at the top.¹ This phenomenon is commonly known as "Maas's law."

I do not know that the phenomenon has ever been quantified. In an investigation of over 250 extant literary works among the Oxyrhynchus papyri, I have measured the slant of column wherever possible. Below are subjoined totals for the columns which can be measured with some probability:²

Slant of Column		
Slope leftwards	10	slight slant (1-2°)
(Maas's Law)	64	definite slant (2-3°)
	36	strong slant (4°+)
Upright	20	definitely upright
	21	apparently upright, but possibly a slight slant
Slope rightwards	1	(slanting about 2°)

Out of a total of 152 measured examples, only one, a fine example of the *Idylls* (*P. Oxy.* 50.3550), appears without much doubt to move rightwards down the column (a couple of others appear upright but may perhaps slope slightly rightwards). On the other hand, almost three-quarters show a measurable slant to the left, and quite a few others have a slighter slant or one more difficult to measure. The tendency to slant has no obvious association with any particular range of dates, or any other characteristic.³

¹ *Pace* Turner, who states—wrongly, by my experience—that the lower lines contain a larger number of letters. See E.G. Turner, rev. P.J. Parsons, *Greek Manuscripts of the Ancient World*² (London 1987) 5.

² The slant is measured by testing, with ruler and protractor, the vertical line of the left margin against the horizontal line made by the line of writing. I have personally inspected all of these papyri. For a list of the papyri studied, see W.A. Johnson, *The Literary Papyrus Roll; Formats and Conventions. An Analysis of the Evidence from Oxyrhynchus* (Diss. Yale 1992), Table 1.2.

³ No support is found for the supposition of Grenfell and Hunt that column slant is characteristic of earlier texts (see introduction to *P. Oxy.* 1.16). I also find no correlation between height of column and Maas's Law, a possibility suggested in G. Cavallo, *Libri Scrittura Scribi a Ercolano* (Naples 1983), 18. A slight cor-

Scholars have commonly assumed that the columns were intended to be upright, and that the slant to the column is, in effect, a mistake. It has been supposed, for instance, that the column slant was the consequence of writing on one's knee.⁴ But I would like to entertain for a moment the possibility that the slope is a deliberate aesthetic effect. After all, many styles of Greek script lean forwards, some so rakishly that it cannot but be deliberate. I might mention *P. Oxy.* 7.1017 (pl. 6) as but one example where the slope of hasta matches the slope of the column, creating to my eye a lovely harmony in the overall layout. This may, of course, be no more than my own whimsy.

But if it be a prejudice that the proper column is upright and a fancy that the sloping column is aesthetic, how are we to proceed? One means will be to look at the markings which the scribe adds to guide the layout of his text. Such markings are in fact quite rare,⁵ but are not perhaps so rare as has been thought. Among the extant works from Oxyrhynchus, I have noticed seven examples (two of which however may be doubted), and to that we can add four others among other Oxyrhynchus papyri. As only three of these have been remarked by the editors, and as the particulars for the rest have not been fully set forth, I offer below a detailed description of all the Oxyrhynchus examples I have encountered.

P. Oxy. 15.1815. The first book of the *Iliad* written in a large crude hand of the third century. A probable vertical row of dots is visible just in from the left margin of column 2 below lines 65, 67, 70, and, very uncertainly, 72. The dots align with the considerable (4-5°) leftwards slant at the left margin. Distance between dots: 17, 25, 18(?) mm. Damage to the papyrus will allow the hypothesis that there were originally dots below each line at 8.5 mm. intervals. But the papyrus has much stray ink, making it uncertain that the dots we have described are intentional.

P. Oxy. 17.2098. A handsome roll of the seventh book of Herodotus, written in an exaggeratedly flattened and stylish severe-style hand of the late second or early third century. A vertical row of dots is visible just in from the left margin in column 6, at the base or immediately below lines 1, 11, 13, perhaps 15, and 17

relation with formality of script is possible. Though upright columns characterize only a quarter of the sample, nearly half of the poorly-written examples (10 of 23) contain columns without any discernible slant. But there are many well-written manuscripts with upright columns, and the tendency among poorly-written examples is not strong. Interestingly, Maas's law is observed in all of the Homeric papyri in the sample; but it is hard to see what significance lies therein.

⁴ Turner, *GMAW*², p. 5 cites for this idea A. Dain, *Les Manuscrits*² (Paris 1964), 25. But whether Dain had Maas's Law in mind can be doubted, since he relates the difficulty of writing on one's knee to a general sort of irregularity in the production. "You will see then that the successive columns of writing on papyrus may not be always exactly vertical, but incline sometimes to one side, sometimes to the other; that the writing may have a tendency to be larger at the foot than at the top of the column." The Oxyrhynchus materials in any case do not show a tendency to incline one way or the other, as we have seen, but are either upright or, more often, drift leftwards down the column. Given the variety of specific postures in artistic presentations catalogued by Parássoglou (sometimes writing on the right knee, sometimes on the left, and sometimes on the left hand), it becomes difficult to imagine that the physical posture of the scribe predetermined the slope of columns. See George M. Parássoglou, "ΔΕΞΙΑ ΧΕΙΡ ΚΑΙ ΓΟΝΥ: Some Thoughts on the Postures of the Ancient Greeks and Romans when Writing on Papyrus Rolls," *Scrittura e Civiltà* 3 (1979) 5-21. But it must be admitted that the evidence collected by Parássoglou seems to include no representation of a professional scribe. Scribal habits in Graeco-Roman Egypt may well have been different in any case. (In this regard one would like to cite Cavallo *LSSE*, 18, where it is stated that the Herculaneum materials almost totally lack examples exhibiting Maas's Law. The plates in that volume however appear to belie Cavallo's claim; I measure several examples with a 2-3° slant to the column.)

⁵ Turner, *GMAW*², p. 4, n. 7 catalogues a total of eight examples, the most complete listing known to me.

(overwritten by the descender of τ in the last two instances); also in the same position in column 10 line 1 (pl. 3), and probably also lines 3 and 5 (overwritten by the initial letter in the last two instances). The dots align with the 3-4° leftwards slope of the left margin. Distance between dots: 65.5, 12.5(?), 13 mm. in column 6; 12.5, 13 mm. in column 10. The other columns are too badly rubbed for dots to be visible. We may with some confidence suppose that the dots were regularly written at the base of every other line, at approximately 13 mm. intervals.

P. Oxy. 17.2102. Plato's *Phaedrus* written in an upright, slightly elongated bilinear script without pre-tension, perhaps to be assigned to the later second century. A vertical row of dots is just visible immediately in from the left margin in column 3 below line 2, at mid-line in lines 6 and 10, well below line 13, towards the top of line 21, below line 24, and at the base of line 28. The dots match the strong (4°) leftwards slant of the left margin. Distance between dots: 19.5, 19.5, 20, 38.5, 20 mm. (the last cannot be measured due to a break). Assuming dots at a regular interval of 19.5 mm., we find that the one dot missing from the sequence would occur at a spot where ink and damage very likely obscure it (line 17). Note that the regular spacing does not accord with the leading⁶ of the lines (averaging 5.35 mm. for this column). Despite the excellent preservation of columns 4 and 5, and the fair state of columns 2 and 6, no other rows of dots are noticeable. What appears to be such a dot occurs in column 9 line 10, but too little survives to confirm it.

P. Oxy. 24.2402. A neat but informal copy of Aristotle's *Nicomachean Ethics*, probably of the middle second century. A possible vertical row of dots is visible about three characters in from the left margin in fr. 1 at lines 5, 7, and 11. But the first two dots are uncertain; the first may belong to the top arm of ϵ , despite an apparent gap, and the second is somewhat ill-formed, hence perhaps accidental. Only the dot at 11 seems certain, and in isolation it too may of course be accidental. All the dots are however exactly 9 mm. apart, except between lines 7 and 11, where the distance is twice that; the dot which might have been expected in line 9 may be hidden underneath a small vertical strip, which presently obscures that spot on the papyrus. The dots follow a line parallel to the left margin, which has no, or very little, slant. The 9 mm. interval is approximately twice that of the leading, which measures 4.7 mm. No dots are visible in fr. 2 (pl. 13).

P. Oxy. 48.3376. A fine roll of the second book of Herodotus, written in a fine, small, flattened severe-style hand of perhaps the later second century. The editor noticed a vertical row of dots at the left edge of the column in several fragments, stating in the introduction that "in some places a dot can be seen above the initial letter of every fifth line." But this is not strictly true by his own transcription (cf. 25-27.ii, 28.ii). Moreover, the editor has missed a fair number of dots. A complete list follows: fr. 11-16.ii below or at lines 11, 15, 19, 23, 27, 31; fr. 17-18 below or at lines 15, 19, 23; fr. 19-21 below line 11; fr. 25-27.ii below or at lines 3, 7, 11, 16, 20, 25, 29, 34, 38; fr. 28.ii below or at lines 34, 38, 43; fr. 36 below line 1; fr. 48 below line 1. The location of the dots is irregular in relation to the line, placed often between lines, but also frequently mid-line (the editor's transcription is misleading in this respect). The dots are sometimes obscured by the initial letter (and hence missed by the editor): thus, for instance, at fr. 25-27 lines 16 (obscured by descender of γ), 20 (obscured by top of ν), 25 (obscured by foot of α), 34 (inside the bowl of δ). Most of the dots of this sort were located (and sometimes confirmed with the microscope) by noticing that the dots do not in fact regularly occur at a fixed point every fifth line, but do occur at quite exact 22 mm. intervals. The same interval is true for all the columns. The dots are laid out on a line which slopes leftwards from the true perpendicular, and matches the 2-3° slant of the written column.

P. Oxy. 49.3447. A fine copy of Strabo, book 9, written in a calligraphic majuscule of the "Homeric" type, perhaps to be assigned to the early second century. In fr. 2 are apparent two vertical rows of dots, which are parallel, but do not align horizontally. The two rows are about 1 cm. apart, positioned at approximately 2 and 4-5 characters from the left margin. The dots occur approximately every line and a half, and do not agree with the vertical spacing of the lines. The distances between dots are as follows: for the left row, which begins high in the first line, 6.5, 6.5, 6.0, 7.0, 12.0 mm.; for the right row, which begins about 3 mm. above the first line, 6.0, 6.0, 13.0, 13.0, 24.5(?) mm. Roughly then a 6.0-6.5 mm. interval. A single vertical row of dots is discernible in fr. 15 col. i at approximately 8-9 characters into lines 1, 2, 3, 5 (pl. 4). These are more

⁶ I use leading to signify the vertical distance between lines from base line to base line.

regularly spaced at 6.5 mm. intervals (with one dot obscured), beginning mid-high in the first line, as follows: 6.5, 6.5, 12.5 mm. We should expect to see dots in lines 6-7 of this fragment, but none are apparent. All three rows of dots align at a slant of about 2° from the perpendicular, which matches the leftwards slope at the left margin of the column. Since two of the three rows begin at the top of the column, one might speculate that the second row in fr. 2, which begins 3 mm. into the top margin, was erroneously positioned, and that the first row in that fragment was meant to correct it.

P. Oxy. 50.3552. A very handsome copy of Theocritus, written in a fine calligraphic script of the Homeric majuscule type, assigned by the editor to the second century. As the editor notes, a vertical row of largish dots is apparent in a straight line about 11-12 characters from the left margin. The dots are all either very slightly below or at the base of the line of writing. The dots can be seen at lines 14, 17, 27-8, 30-40, 42; other lines are rubbed at this point in the line. The vertical row, as the editor suggests, seems to be in parallel with the slight leftwards slant at the left margin. The dots are spaced at the following intervals: 5.5, 12, 5.5, 5.5, 7.5, 5.0, 5.5, 7.0, 5.5, 5.5, 6.75, 11, 6.75 mm. The variance in interval is reflected in a slight irregularity of leading between lines.

P. Oxy. 39.2889 (pl. 5). A fragment preserving the beginning of the *Miltiades* of Aeschines Socraticus, written in a severe-style script of perhaps the early third century. Brought to notice by W.E.H. Cockle (see the editor's introduction to *P. Oxy.* 50.3552) is the vertical row of dots placed in the margin 2.8 cm. to the left of the first column of writing. Each dot aligns with the base of a line of writing, and is spaced at the regular 5.3 mm. interval which is characteristic of the leading of the lines. The row of dots slopes however rightwards at a fair angle (3°), while the column of text is upright.

P. Oxy. 18.2161, 2162; 20.2245. Three among the large group of fragments containing a matching set of the plays of Aeschylus, of the second or early third century. Visible 0.3 cm. to left of both cols. ii and iii of *P. Oxy.* 20.2245 (pl. 1) is a dot level with the top of the first line. Col. ii has a second dot about 0.7 cm. below; at that point in col. iii, an encrustation hides whatever might be below. The two top dots are 12.5 cm. apart, and would appear to mark a regular column-to-column width for a text where the line lengths are quite variable. A similar dot appears at *P. Oxy.* 18.2162 fr. 1(a).i (pl. 4) 0.9 cm. to the left on a parallel with the indentation of the tetrameters and level with the top of the first line (no second dot exists). Another such dot may perhaps be discernible in *P. Oxy.* 18.2162 fr. 2(a) ii (pl. 5) immediately at the top left of the column, partly interfering with kappa (the dot appears as though a serif at the top of the hasta, but this hand does not usually write κ with a hook; a more elaborate initial is however possible). Possibly also of the same type is a bit of ink at the top left of col. ii in *P. Oxy.* 18.2161 (pl. 3); but if so, the dot appears at the edge of the *eisthesis*.

It will be noted that our last two examples are somewhat different in kind. *P. Oxy.* 20.2245 and its fellows contain dots intended merely to mark regular column positions in a dramatic text with variable lines and multiple levels of indentation. *P. Oxy.* 39.2889 contains a row of dots which seems intended to set the number and leading of lines for the entire papyrus, a use which is close to, but not quite the same as, the other examples. In the rest of the examples, the dots are over-written by the column, and were not intended to be seen by the reader. Such dots (as also *P. Oxy.* 39.2889) are usually regarded as ruling dots, that is, as dots which govern the vertical disposition of the lines, and ensure a stable leading. This can be asserted positively for 4 of our examples, where every line or every other line appears to be so marked. But in three of our examples no correspondence appears between the dots and the vertical spacing of lines; in two of the three the dots are indeed quite widely spaced, at *ca.* 20 mm. All of our examples space the dots at a regular interval, most quite regular, indeed so much so that we have been able to detect a number of dots simply by predicting with a ruler where the next dot should be. Such regularity of layout includes those examples where the

dots and the disposition of lines are at odds. What are we then to infer from such evidence? We could suppose that the dots which conflict with the disposition of lines are simply ignored by the scribe. But this forced position is made worse by the fact that 3 of 7 examples are of this "exceptional" sort. Why would scribes carefully lay out such dots only to dismiss them? We must also concede that our two examples of widely-spaced dots would be of questionable use in the spacing of individual lines. On the other hand, all of our examples (*P. Oxy.* 39.2889 excepted) display a row of vertical dots which is parallel to the left margin of the column; and in 6 of 7 examples the column is not perpendicular but slanted in accordance with Maas's law.

H.M. Cockle (in her introduction to *P. Oxy.* 50.3552) has suggested that the coincidence of oblique lines may mean that the scribe "marked each successive column as he went along." Thus the slant of the row of dots is caused by an attempt to maintain a parallel with the previous column (which has assumed a slant by mistake or awkwardness of writing surface). This explanation is possible, but I should like to forward another: that these vertical rows of dots and the left margin of the column display a matching slant from the perpendicular entirely by design. While it appears that some dots were used to guarantee an even leading among lines, it also appears that some, and perhaps all, were intended to guarantee a left margin along a particular (sloped) line. The fact that in *P. Oxy.* 49.3447 (as also in *P. Oxy.* 50.3552) the dots fall in the middle of the line, and not at the column's edge, may suggest that they were laid out prior to the columns. The example of *P. Oxy.* 17.2102 further suggests that such dots were sometimes intermittent aids to alignment, and not provided in every column. Certainty is impossible from so small and mixed a sample, but these dots, if they are in fact meant to assist with the column alignment, provide some positive evidence to support our hypothesis that the slanted column was a deliberate and popular style, and not the result of some mechanical defect in the production of the book.