Since Wilamowitz launched a discussion of the origins of scholia a century ago, one small element in the debate – the size of scholiastic scripts – has gone unexamined. Here I would like to make good the omission and fit the findings into our present understanding of the genesis of scholia, the classic example of which are those of \textit{Venetus A}, the 10th century manuscript that contains the principal scholia to Homer's \textit{Iliad} (Fig. 1). The evidence presented here will strengthen the increasingly strong argument, I believe, that scholia of the Byzantine form could have existed earlier than the ninth century. A summary, first, of principal points in the earlier discussion is needed for context.

\textbf{Wilamowitz:} In 1907, Wilamowitz made the case that Didymus' first-century commentary on Aristarchus will have been too hard to consult unless it was written, together with Aristarchus' edition of Homer, in a single manuscript: "in a word, text with scholia." As evidence that such books in fact existed, he pointed to \textit{P.Par. 71} (Fig. 2), the densely annotated first-century manuscript of Alcman, a papyrus remarkable for both the quantity and the learning of its marginalia and interlinear notes. In fact, the comments in the Alcman are more limited in scope and more sporadic than a good set of scholia would be. Nevertheless, Wilamowitz presented it as evidence that, "In the imperial period, the text with scholia is a legitimate form of book. It is the legitimate form for scholarly commentary." Egypt, however, produced no additional early texts to reinforce the claim.

\textbf{White:} In 1914, J. W. White set out an alternative hypothesis in his edition of the scholia to Aristophanes \textit{Birds}. He reasoned that since literary commentaries on papyrus continued to circulate as independent books right until late antiquity, the invention of mediaeval-style scholia should be assigned to that period – specifically, to the 4th or 5th century, when manuscripts on friable papyrus rolls began to be replaced with durable codices of parchment. If the margins of a parchment codex were sufficiently large, he reasoned, they will have been able to accommodate extensive commentary. And if a scribe were to transcribe the contents of an old papyrus hypomnema on the \textit{Birds}, for example, into the four clearly

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1 I first presented the data discussed here in \textit{Annotations in Greek and Latin Literary Texts From Egypt} (Oakville, CT 2007) 100–105. In this paper I offer additional analysis and contextualization, plus illustrations. Abbreviations of papyrological publications are from J.F. Oates, R.S. Bagnall et al., \textit{Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca, and Tablets}, <http://scriptorium.lib.duke.edu/papyrus/texts/clist.html>. Literary papyri are cited by MP\textsuperscript{3} number, from P. Mertens and M.-H. Marganne, \textit{Mertens-Pack\textsuperscript{3} on Line}, <http://www2.ulg.ac.be/facphl/service/cedopal>.

2 Digital scans of the manuscript and of the 1901 facsimile are available at <http://chs75.chs.harvard.edu/manuscripts> and <http://www.stoa.org/chs>, respectively.

3 Wilamowitz 1907, 165–168.

4 \textit{P.Par. 71}; MP\textsuperscript{3} 78; for the first critical edition see Page 1951.

5 Wilamowitz 1907, 168, 166.

6 White 1914, lii–liii.
demarcated borders of the new parchment page, he will have produced a book far more "scholiastic" in physical appearance than annotated rolls from the early Roman period. If that scribe or another made a systematic compilation of multiple commentaries and copied the result into margins, scholia will have been created.7

**Zuntz (1939):** In twenty-five years that followed White's edition, Egypt failed to yield evidence to support his hypothesis either. A vigorous reaction against the idea came, in 1939, from Günther Zuntz, who in a study of marginal annotations in Aristophanes papyri again took up the question of how the Aristophanes scholia took shape.8 He reasoned that, in the first place, learned commentaries of the sort known from papyri were far too long to have fitted into the margins of any manuscript before the 6th century.9 In the second place, although those old-fashioned, independent commentaries continued to exist as late as the 6th century, they disappeared by the 9th. The reason surely was that scholia, invented in the interim, had rendered them superfluous. The page design of scholiastic manuscripts, their pages consisting of "two fundamentally equal, important elements, the text and a commentary in the margin," interested him especially. He stressed the well regulated layout typical of scholiastic texts, where marginal commentary is marshaled in compact, evenly spaced blocks with straight left and right margins, whether it is written above, below, or on either side of the main text.10 (By contrast, the arrangement of notes in the 1st-century Alcman is almost haphazard. Longer explanations are relegated to the roomier top and bottom margins—as indeed also happens in scholia—but their positioning is off center, and their placement seems not to matter to the scribe. Other notes are squeezed between the lines or into intercolumnia, or are fitted around the ends of lines. Twice they intrude into the columnar space—once each in columns ii and iii, near the bottom. In notes that run to more than one line, the writer shows no interest in aligning the successive lines; Fig. 3). Zuntz set the invention of scholia in the time of Photius (patriarch in 858–867 and 877–886), and he sought their origins not in earlier secular books but in manuscripts of the Greek Bible surrounded by explanations compiled ("chained") together as catena (Fig. 4). The earliest catena manuscripts, of the 8th or 9th century, predate the earliest fully scholiastic manuscripts.

**Lobel:** Here the matter rested until Lobel's publication in 1952 of *P.Oxy.* XX 2258, a papyrus codex of Callimachus of the sixth or seventh century (Fig. 5). All four margins of this manuscript were originally extraordinarily wide (the widest surviving side margin is 8.5 cm), and what survives is packed with dense, learned commentary written in a professional script. These are not occasional notes like those in the Alcman or in other manuscripts of earlier centuries. They were planned. In 1965, Zuntz allowed that the Callimachus is a "missing link" between the occasional marginalia of early texts and scholia of

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7 White 1914, lxiv–lxv.
8 He remained largely silent in 1939 about Wilamowitz' discussion of the transmission of scholia. Later, he characterized it generally as "das schönste und eindringlichste, was über Überlieferungsgeschichte geschrieben worden ist," (Zuntz 1975, 131), although in 1965 he had made clear his fundamental disagreement with Wilamowitz' hypothesis of an Augustan-era scholiastic model; see Zuntz 1965, 275n.
9 Zuntz 1975, 74–75, 86–89.
10 See plates 1, 4, 7, 8, and 9; also, e.g., *Venetus B: Marcianus Graecus Z.* 453 (= 821) <http://chs75.chs.harvard.edu/manuscripts/>. 
later ones. But he found its scholia "sadly squeezed by the – still dominating – text," and he resisted assigning it much importance in the development of scholia, for "the classical balance between text and commentary is not yet in sight."11

**Wilson:** In 1967, Nigel Wilson offered a carefully nuanced reshaping of the discussion.12 He undermined, on chronological grounds, the theory that scholia are rooted in Biblical catenae, and he redirected attention to two important transformations essential to the invention of scholia. One was the deliberate and systematic creation of the composite commentaries that make them up. Subscriptions like that in *Venetus A*, where four sources are named, sometimes identify multiple sources explicitly, but there is also abundant internal evidence in many scholia, for example the preservation of multiple and contradictory comments on a single point of text, or the use of ἀλλάως to separate such comments. Ancient *hypomnemata*, on the other hand – although they typically are the product of extensive excerpting and augmentation – do not present, one after another, redundant explanations of individual issues. Instead, material from diverse sources is incorporated in commentaries into a single, un repetitive narrative. In seeking the origin of scholia, Wilson saw, the question to ask was how far back one might trace deliberate compilations of commentaries of the sort that eventually became scholia. The answer, although hedged about with uncertainty, led him to a period much earlier than the Byzantine period. Limited compilation is evident in the marginal material of at least one late-antique book, the Oxyrhynchus Callimachus, in which Pfeiffer regarded certain telltale repetitions as indications of multiple sources. Wilson, however, found even earlier evidence, in a Latin source. Scholia on the *Eclogues* of Vergil nominally by one Philargyrius (5th century?)13 survive in a single manuscript of the 9th century and one of the 10th. In these texts, the word aliter distinguishes comments from different sources, in the same way that ἀλλάως does in Greek sources: the use of aliter in this way "seem[s] to be several centuries earlier than any known in Greek, where [ἀλλάως] occurs in manuscripts of the 10th century."14

**Turner:** The second transformation that Wilson saw as necessary for the creation of scholia was the adoption of page layouts capable of accommodating full marginal commentaries. This change, also, can be shown to be pre-Byzantine. He himself made this observation, although the extent of the evidence was not so apparent until Eric Turner’s publication, a decade later, of his comprehensive system of classification of papyrus codices according to size and shape. Wilson had cited, as examples of large-format manuscripts possibly suitable for scholia, a 4th century Vergil from Antinoopolis and a 6th century Nonnus in Berlin.15 Turner put these and four others in his Group 1, "The Largest Sizes." The oldest of them, the Antinoopolis Vergil, is also the fourth largest. The two smaller ones happen to be very late – the 6th century Nonnus and an 8th century Sirach – and thus have no bearing on whether books big enough for scholia existed in earlier times. Two of the three manuscripts larger than the Vergil, however, (a Cicero

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11 Zuntz 1965, 274n.
13 Not all the scholia that are preserved under his name are assuredly his work.
15 P. Ant. I 29 (MP 2937), calculated by Turner as 27.5 by 41 cm in dimensions, with a bottom margin of 9.2 cm; P. Berol. inv. 10567, BKT V. 1.94–106 (MP 1329), whose reconstructed size is 28 by 40 cm.
and a Vergil glossary), are assigned to dates as early as the 4th–5th century. Largest of the six is the remarkable Oxyrhynchus Callimachus of the 6th or 7th century. Of these six largest codices, moreover, both the oldest one and the largest one – the Antinoopolis Vergil and the Callimachus – contain marginalia. In one case the marginalia are dense. Clearly the development of page layouts suitable for scholia was a pre-Byzantine event.

**Zuntz (1975):** Zuntz offered a final word on the subject in 1975, reiterating that the Oxyrhynchus Callimachus represents only a ‘preliminary’ stage in the development of scholia. Its bulky Coptic uncial could not, he argued, produce the typical *mise-en-page* of scholiastic manuscripts, in which an arrangement of equally important text and scholia pleases the eye in its “classical balance.” For Zuntz, the imbalance of the page design in the Oxyrhynchus Callimachus only demonstrated "how much work there remained to do;" a new, compact script, in addition to a new book form, was in his view essential. The script he had in mind was minuscule, which first appears in a literary context quite late, in the Uspenski Gospels of 835 CE. — too late for Byzantine-style scholia to be an ancient invention. The insistence on minuscule is new.

From the codicological point of view, in sum, Zuntz’s conviction that scholia had a Byzantine origin finally rested on two tenets. The first was that books of suitable format only came into existence in the very late 8th or early 9th century. This objection can now be set aside, given the evidence of the six late Roman papyri discussed above, plus that of several others in which the large format, innovative in its day, will have been suitable for scholia. Several of these also contain dense, neat, professionally written annotations. The other essential ingredient in scholia was minuscule, since available ancient scripts were not, in Zuntz’s view, small enough to produce a page of text and scholia that was aesthetically pleasing. The evidence of ancient manuscripts undermines this claim also.

**Minuscule and Other Small Scripts: the Evidence**

Measurement of handwriting in several ancient papyrus and parchment manuscripts reveals the existence of scripts even smaller than one finds in many minuscule scholia. In the following Tables I lay out this evidence. For both ancient and Byzantine texts, examples come from collections of plates that are generally accessible. The Tables set forth the average measurements of select letters in four kinds of book:

- Table 1: parchment manuscripts containing scholia or catenae (9th to 12th century)
- Table 2: papyrus rolls and codices from Egypt (3rd century BCE to 4th century CE)
- Table 3: parchment codices in Greek or Latin from Egypt: 3rd to 7th century
- Table 4: parchment codices in Greek or Latin from non-Egyptian sources (4th to 6th century)

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16 Turner 1977, 14 (Table 1).
17 Zuntz 1975, 132 (Nachwort).
19 The texts in question are MP 45, 119, 186, 543.3, 1356, 1489, 1630, 2277, 2280, 2281, 2282, 2286, 2861, 2866, 2867, 2919, 2934, 2937, 2955, 2965, 2966, 2970, 2971, 2972.2, 2974, 2979.1, 2982, and P.Vindob. Lat. 110 ined. (Seider, PLP 2.2.38). The major twentieth-century palaeographers (Lowe, Seider, Bischoff) noted the new layout and script of some legal texts but stopped short of linking these features with scholia. McNamee 1997 discusses the evidence; see also McNamee 1995 and 1998.
The most striking feature revealed by the evidence is this: that however small the smallest scripts represented in Table 1, and whatever their style (capitals, half uncials, and minuscule are all represented), comparably small scripts can be readily found in papyrus and parchment rolls and codices that are several centuries older (Tables 2, 3 and 4).

Some caveats necessarily precede the presentation of evidence. First, the measurement of handwriting is tricky, and so the dimensions I give\(^{20}\) may be slightly inaccurate for any of several reasons: photographic evidence for most manuscripts is usually just a single exemplary page, but writers are not necessarily consistent. Photographic scales may be unreliable. Reports of dimensions may be approximate. Eyesight deteriorates. Autopsy has not been possible for this paper. Moreover, the manuscripts in Table 1 may not, in fact, be representative of scholiastic manuscripts overall. But because the editors of the collections of plates mention no palaeographical eccentricities, I am reasonably comfortable offering these measurements. Even with these limitations, I trust that the information adduced works for the kind of general comparisons I make here.

Table 1 gives the size of marginal scripts in a sampling of sixteen manuscripts of the 9th to 12th centuries. For minuscule scholia, test letters range in height from 0.5 to 2 mm. Most scholia in half uncials (a script that was "much used for marginalia, especially in the period c. 875–c. 975")\(^{21}\) fall in the same range. This is an interesting observation, given Zuntz’s insistence on the need for minuscule to accommodate lengthy scholiastic texts. The evidence of the selected Byzantine manuscripts shows, rather, that capitals and half uncials alike – both scripts that long pre-date the 9th century – could be written very small.

<table>
<thead>
<tr>
<th>Letter Height (mm)</th>
<th>Marginal Script</th>
<th>Date</th>
<th>Contents</th>
<th>Ms.: Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5–1</td>
<td>minuscule</td>
<td>xi (2nd half)</td>
<td>Ps.-Dionysius the Areopagite</td>
<td>Lincoln College Ms. Gr. 14; Wilson 1973, 36</td>
</tr>
<tr>
<td>0.9</td>
<td>half uncial</td>
<td>x</td>
<td>Hom.</td>
<td>Codex Marcianus 454 (822), Venetus A'</td>
</tr>
<tr>
<td>1.2</td>
<td>minuscule</td>
<td>ix (888)</td>
<td>Eucl.</td>
<td>MS. D’Orville 301; Wilson 1973, 13</td>
</tr>
<tr>
<td>0.9</td>
<td>half uncial</td>
<td>ix</td>
<td>Photius</td>
<td>Barocci 217 (S.C. 217); Wilson 1973, 15</td>
</tr>
<tr>
<td>1.6</td>
<td>minuscule</td>
<td>ix (895)</td>
<td>Pl.</td>
<td>MS. E. D. Clarke 39; Wilson 1973, 14</td>
</tr>
<tr>
<td>0.9–1 and 1–1.2</td>
<td>half uncial</td>
<td>Pl.</td>
<td></td>
<td>Auct. T. 27 (S.C. 20611) (Misc. 207); Wilson 1973, 40–41</td>
</tr>
<tr>
<td>1</td>
<td>minuscule</td>
<td>xi (2nd half)</td>
<td>Hom.</td>
<td>Auct. T. 27 (S.C. 20611) (Misc. 207); Wilson 1973, 40–41</td>
</tr>
</tbody>
</table>

\(^{20}\) Measurements indicate the height of letters selected because they lack ascenders or descenders. For minuscule manuscripts, those used are \(\pi\) and \(\tau\); for other Greek scripts, the letter \(\nu\); for Latin, the letter \(n\). Where individual scribes are inconsistent, I approximate the average size of the letters. Manuscripts in the tables are arranged by size of script, from smallest to largest.

\(^{21}\) Wilson 1973, n. 14, discussing the Clarke Manuscript of Plato (see Table 1).
When we turn from mediaeval to ancient manuscripts, we find papyrus book rolls (Table 2) with marginal or interlinear notes comparable in size to those of the scholia of the much later manuscripts in Table 1. Clearly the writing surface of papyrus was no great obstacle to the formation of extremely small letters, since at least thirty papyri have annotations under 2 mm in height. Several contain even smaller scripts:

<table>
<thead>
<tr>
<th>Letter Height (mm)</th>
<th>Date</th>
<th>Ms.</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (marg.), 1 (text)</td>
<td>ii</td>
<td>MP² 254</td>
<td>Critias or Eur.</td>
</tr>
<tr>
<td>1.1</td>
<td>ii</td>
<td>MP³ 1370</td>
<td>Pind.</td>
</tr>
<tr>
<td>1.2 interl., 1.5 &amp; 1.9–2 mg.</td>
<td>ii</td>
<td>MP³ 63</td>
<td>Alc.</td>
</tr>
<tr>
<td>1.3, 1.7</td>
<td>i–ii</td>
<td>MP³ 1448</td>
<td>Sappho</td>
</tr>
<tr>
<td>1.3–1.5</td>
<td>iii</td>
<td>MP³ 106</td>
<td>Ap.Rhod.</td>
</tr>
<tr>
<td>1.4, 1.6</td>
<td>ii</td>
<td>MP³ 1489</td>
<td>Theocr.</td>
</tr>
<tr>
<td>1.5 (text)</td>
<td>ii</td>
<td>MP³ 254</td>
<td>Eur.?</td>
</tr>
<tr>
<td>1.5, 1.8</td>
<td>ii</td>
<td>MP³ 1421</td>
<td>Pl.</td>
</tr>
<tr>
<td>1.5, 1.8, 2</td>
<td>i</td>
<td>MP³ 78</td>
<td>Alcm.</td>
</tr>
<tr>
<td>1.5, 2 (interl.)</td>
<td>ii–iii</td>
<td>MP³ 1840</td>
<td>Epic</td>
</tr>
<tr>
<td>1.5 (Latin), 2 (Greek)</td>
<td>v</td>
<td>MP³ 2919</td>
<td>Cic.</td>
</tr>
<tr>
<td>1.80</td>
<td>i–ii</td>
<td>MP³ 1391</td>
<td>Pl.</td>
</tr>
<tr>
<td>1.80</td>
<td>ii</td>
<td>MP³ 1467</td>
<td>Soph.</td>
</tr>
</tbody>
</table>
The capitals used for writing marginalia in several parchment codices found in Egypt (Table 3) also rival the minuscule in size. All but two have scripts between 1 mm (or less) and 2 mm in height. Even the main script can be tiny; the Mani codex is the most remarkable in this respect.

Table 3: Annotations in Parchment Codices Found in Egypt, 3rd – 6th Cent.

<table>
<thead>
<tr>
<th>Letter Height (mm)</th>
<th>Date</th>
<th>Ms.</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9 interl., mg.</td>
<td>v (late)</td>
<td>MP(^3) 142</td>
<td>Ar.</td>
</tr>
<tr>
<td>0.8–1.2 mg.</td>
<td>iv–vi</td>
<td>MP(^3) 2953</td>
<td>Gaius</td>
</tr>
<tr>
<td>1 and less</td>
<td>iv or iv–v</td>
<td>Van Haelst 1976, 1072 (Turner, GMAW, 83)</td>
<td>Life of Mani (main text)</td>
</tr>
<tr>
<td>1</td>
<td>iv–v</td>
<td>MP(^3) 2463.3</td>
<td>Tragedy? (note on Chiron)</td>
</tr>
<tr>
<td>1–1.3</td>
<td>vi</td>
<td>MP(^3) 543</td>
<td>Hippocr.</td>
</tr>
<tr>
<td>1.2, 1.4 mg.</td>
<td>v–vi</td>
<td>MP(^3) 2925</td>
<td>Juvenal</td>
</tr>
<tr>
<td>1.2–2.1</td>
<td>iii</td>
<td>MP(^3) 1354</td>
<td>Pind.</td>
</tr>
<tr>
<td>1.3</td>
<td>iv–vi</td>
<td>MP(^3) 2955</td>
<td>Papinian</td>
</tr>
<tr>
<td>1.5</td>
<td>v–vi</td>
<td>MP(^3) 1534</td>
<td>Thuc.</td>
</tr>
<tr>
<td>1.5–2</td>
<td>v</td>
<td>MP(^3) 325</td>
<td>Dem.</td>
</tr>
<tr>
<td>1.6</td>
<td>iv</td>
<td>MP(^3) 263</td>
<td>Dem.</td>
</tr>
<tr>
<td>1.6</td>
<td>iv–v</td>
<td>MP(^3) 2960</td>
<td>Ulpian</td>
</tr>
<tr>
<td>2</td>
<td>iv–v?</td>
<td>MP(^3) 1338</td>
<td>Parth.</td>
</tr>
<tr>
<td>2,3</td>
<td>v–vii</td>
<td>MP(^3) 149</td>
<td>Ar.</td>
</tr>
</tbody>
</table>

But scripts like those in Table 3 are not a purely Egyptian phenomenon. Handwriting of comparably small size also appears in contemporary parchment and vellum manuscripts from outside Egypt, as Table 4 demonstrates:

Table 4: Annotations in Ancient Parchment Codices Found outside Egypt, 4th – 6th Cent.

<table>
<thead>
<tr>
<th>Letter Height (mm)</th>
<th>Marginal Script</th>
<th>Date</th>
<th>Contents</th>
<th>Ms. ; Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>capitals</td>
<td>iv</td>
<td>OT+NT</td>
<td>Brit. Libr. Add. 43725 (Codex Sinaiticus); Metzger 1981, 14</td>
</tr>
<tr>
<td>1</td>
<td>half uncial</td>
<td>v (before 494)</td>
<td>Verg.</td>
<td>Laurenziana XXXIX.1 + Vat. Lat. 3225 (Codex Mediceus); CLA 3.296</td>
</tr>
</tbody>
</table>
What is significant about Tables 2, 3, and 4 is how many ancient texts of different sorts have scripts even smaller than those used, later, for scholia. It is clear, from this evidence, that the second of the two practical prerequisites on which Zuntz insisted — tiny scripts — was already satisfied in the 4th and 5th century.

With both the palaeographical and the codicological objection removed, the hypothesis of the pre-Byzantine development of scholia gains additional strength. Cultural conditions in the Greek world of late antiquity certainly favored an earlier date for the consolidation and preservation of ancient learned writings in the form of scholia. There was a perennial need for commentaries for grammatical education. Eastern students of Roman law had constant need for translations and explanations in Greek. For readers of Scripture, scholia-like catenae already existed in the late 5th or early 6th century, if their attribution to, or at least association with Procopius is accurate.\textsuperscript{23} The impulse to collect, safeguard, explain, and interpret the classics, finally, certainly existed in the Greek world even in late antiquity: the notes in the Oxyrhynchus Callimachus, which are the most learned and the most extensive of any of the several annotated papyri containing works by this poet, demonstrate this. And if a difficult poet like Callimachus attracted this sort of attention in 6th- or 7th-century Egypt, surely similar manuscripts existed of more popular poets. The co-existence, then, of need, a suitable book design and script, and, possibly, the precedent of the catena, combine to make the development of scholiastic manuscripts before the ninth century a practical possibility. The only thing missing before that time was the minuscule script that Zuntz regarded as necessary to give scholia their distinctive "classical balance." Minuscule may be typical of scholia, but other scripts also produce a pleasing and balanced effect. As Table 1 shows, these were available, and were used, from ancient times well into the Byzantine period.

\begin{table}
\centering
\begin{tabular}{|c|c|c|c|}
\hline
1.2 & Coptic uncial & vi & OT & Codex Vat. 2125; Metzger 1981, 21 \\
\hline
1–1.3 & 'quarter uncial' (Lowe) & iv–v Lowe iv Seider & Ter. & Codex Vat. Lat. 3226 (Codex Bembinus); CLA 1.12; Seider, PGP 2.2.26\textsuperscript{22} \\
\hline
1.3 & half uncial & iv–v & Law & Codex Vat. Lat. 5766 (Fragm. Vaticana); CLA 1.45; Seider, PGP 2.2.24 \\
\hline
1.5–2 & 'informal mixed' & vi & Juv. & Pers. & Codex Vat. Lat. 5750; CLA 1.30 \\
\hline
1.5–1.8 & half uncial & v & Verg. & Verona, XL (38) (Verona Vergil); CLA 4.498 \\
\hline
1.8 & half uncial & vi & Justin. & Laurenziana S.N. (Codex Pisanus, the 'Florentine Pandects'); CLA 3.295 \\
\hline
2.5 & capitals & vi (512) & Dioscorides & Vindobonensis Med. Gr. 1 (De Materia Medica) \\
\hline
\end{tabular}
\end{table}

\textsuperscript{22} Prete 1970 provides photographs of the entire manuscript.
\textsuperscript{23} Wilson 1967, 252 reviews the evidence.
In a sense, however, Zuntz's underlying argument is still unrefuted. Yes, the raw materials for creating a scholiastic book were available to ancient scribes. Yes, they appear in use over and over again, in late codices with wide margins and in long, neatly written notes, in tiny, elegant scripts. Nevertheless, we lack today even a single ancient manuscript that displays the sort of "classical balance" whose absence he lamented in books from before the 9th century. Although he remained silent about what constitutes this "classical balance," we may try to define it. It is a fair guess he referred to the various aesthetically satisfying alternations that one finds in most scholiastic manuscripts, for example, the well regulated variations between large and small scripts and between written and unwritten spaces. Unwritten space is of special importance. Layouts are precisely measured and clearly demarcate the empty marginal space around not just the main text but also the blocks of scholia. Pages tend to be densely but evenly covered with measured blocks of text (Fig. 1, 6, 7 and 8).

An experienced ancient scribe certainly had the capacity to produce a manuscript page with these characteristics. The Oxyrhynchus Callimachus comes very close to such a design, but it falls short in two ways (Fig. 9). It lacks the generous margins that separate main text from main scholia in fine manuscripts like Venetus A; and the bulky marginal script, as Zuntz complained, allows none of the characteristic contrast in script size that one finds on a well designed scholiastic page. Other ancient texts with dense annotation make the same impression: neatness has been sacrificed to content. In the Bembine Terence (Table 4 and Fig. 10, enhanced), for example, marginal additions crowd around the text and squeeze out what would, in a neatly written scholiastic manuscript, be an unwritten band of blank parchment. Even the richest and most beautiful of ancient annotated books, the Dioscorides herbal (Table 4 and Fig. 11, enhanced), written in Constantinople about 512 for the daughter of an emperor, is a sort of tertium quid: neither a scholiastic manuscript of Byzantine design nor a manuscript with a reader's incidental notes, as in antiquity. Its exquisitely written marginal supplements, like scholia, come from more than one source (Galen and Crateusas) and are so labeled, and the pages of the book were left largely blank in order to accommodate them. Unlike notes in earlier manuscripts or scholia in later ones, however, these comments are written in separate columns below the text, not beside or around it. This design is unparalleled and conceivably even experimental.24 Zuntz's particular codicological and palaeographic arguments may not hold up, but in the matter of Gestalt, he remains correct. Nothing actually survives from antiquity that has the dense, compact, yet balanced and well spaced look of a scholiastic manuscript. Late classical scribes may have been able to produce manuscripts that looked like manuscripts with scholia, but physical evidence that anyone did so remains elusive.

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24 Both the original text and the supplements are in uncial, the former written in larger letters than the latter. Between the columns, a later hand transcribed all this material in minuscule.
Fig. 1:
Homer Iliad. Venetus A: Marcianus Graecus Z. 454 (= 822) fol. 14r (saec. X)
Fig. 2:
Alcman *Partheneion*. Paris, Louvre 3320, saec. I

*P.Par* 71, *GMAW* 16
Fig. 3:
Alcman Partheneion. Paris, Louvre 3320, saec. I
(enhanced to distinguish text from marginal material)
Fig. 4:
Job with catena. Vat.Gr. 749 fol. 52v, saec. IX
Franchi-Lietzmann 8

Fig. 5:
Callimachus varia. P.Oxy. XX 2258 C fr. 2 back, saec. VI-VII
<http://163.1.169.40/cgi-bin/library>.
Fig. 6:
Aristophanes Ranae. Ravennas 137, 4A, fol. 34r, saec. X-XI
van Groningen 6 (enhanced to distinguish marginal material)
Fig. 7:
St. John with catena. Christ Church, MS. Wake 2, fol. 238r, saec. X
Wilson MGB 29 (enhanced to distinguish marginal material)
Fig. 8:
Dionysius the Areopagite with catena. Vat. Gr. 504, fol. 32r, 1105 CE
Franchi-Lietzmann 28 (enhanced to distinguish marginal material)
Fig. 9:
Callimachus varia. P.Oxy. XX 2258 C fr. 2 back, saec. VI-VII
(enhanced to distinguish text from marginal material)

Fig. 10:
Terence, Andria; Cod. Vatic. Lat. 3226 (Bembinus), saec. IV or V
PLP 2.2.26 (enhanced to distinguish text from marginal material)
Fig. 11:
Works Cited


Zuntz 1975 = G. Zuntz, Die Aristophanes-Scholien der Papyri (Berlin 1975²).