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PROSE RHYTHM IN THE ORATIONS AND EPISTLES OF MARCUS ANTONIUS MURETUS

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ABSTRACT OF THESIS

PROSE RHYTHM IN THE ORATIONS AND EPISTLES OF MARCUS ANTONIUS MURETUS

Marcus Antonius Muretus, the sixteenth century French and Italian Humanist orator and professor, employed, in his orations and, to a lesser degree, in his epistles, a system of metrical prose rhythm (*numerus*) consistent with Ciceronian practice. Muretus did not, however, seek to employ accentual prose rhythms (*cursus*) characteristic of medieval prose; nevertheless, such rhythms arose naturally in his work as a byproduct of metrical prose rhythm. These findings, confirmed by statistical analysis, are congruent with the assumption that Humanist authors preferred Ciceronian stylistics to those associated with the "middle ages," in accord with the tripartite Humanist narrative of history, in which the Humanists usher in a Renaissance of learning and elegance lost by preceding centuries.

KEYWORDS: Humanism, Marcus Antonius Muretus, Numerus, Prose Rhythm, Cursus

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THESIS

Miller Stanley Krause

The Graduate School

The University of Kentucky

2009

PROSE RHYTHM
IN THE ORATIONS AND EPISTLES
OF MARCUS ANTONIUS MURETUS

THESIS

A thesis submitted in partial fulfillment
of the requirements for the degree of Master of Arts
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at the University of Kentucky

By

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Lexington, Kentucky

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CHAPTER ONE: THE HISTORY OF PROSE RHYTHM

Roman rhetorical practice from the first century BCE valued rhythm, known by the Latin *numerus* or the Greek ῥυθμός.[1] Rhythm in the abstract is the repetition of patterns;[2] in oratory, it means repetition of patterns of sound in some sense. Roman orators employed manifold strategies for achieving rhythmical effects, of which one, the careful arrangement of syllables based on metrical quantity, became a central method for creating rhythmic patterns and was known by the same name as the entire constellation of tactics for achieving rhythm: *numerus*.[3]

Both the genus and species of *numerus* fell under the rubric of *elocutio*, or style, in explications of rhetorical art. The careful arrangement of words according to *numerus* provided a kind of ornament for the speech; such ornament, to all but the most stubborn Atticists, was a necessary component of *eloquentia*, and therefore *numerus* was necessary for *eloquentia*.[4] This eloquence was not only an artistic virtue but also a practical advan-

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[1] Cicero gives ῥυθμὸς as a synonym of *numerus* at *Orator* 67, Quintilian at *Institutio Oratoria* 9.4.54 ("Nam sunt numeri ῥυθμοί.").

[2] A. P. David, *The Dance of the Muses: Choral Theory and Ancient Greek Poetics* (New York, NY: Oxford University Press, Inc., 2006), p. 246, gives the first attested use of the word ῥυθμος in Greek, Archilochus 128.7, as meaning "the perpetual succession of good and evil in men's lives."

[3] For the strategies not based on syllable quantity but upon the arrangement of morphologically similar words or the balancing of ideas, see Cicero, *Orator* 164–167. The confusion between *numerus* as a genus, complecting various strategies, and as a specific strategy within that genus, derives from Cicero's use of the term, lamented repeatedly since the Renaissance, including by the Humanist grammarians Strebaeus (*De Electione et Oraoria Collocatione Verborum,* pp. 209–210) and Rapicius (*De Numero Oratorio*, 2), as well as the sixteenth-century philosopher Ramus (*Bruttinae Quaestiones*, 101); among late modern scholars, see Wilkinson (*Golden Latin Artistry*, pp. 138–139).

[4] Cf. Cicero, *Orator*, 228: "Hanc igitur, sive compositionem sive perfectionem sive numerum vocari placet, adhibere necesse est, si ornate velis dicere…." Also 142: "Nam si

tage for the Roman orator persuading listeners whom such ornament affected, as Cicero explains:

> Contiones saepe exclamare vidi, cum apte verba cecidissent.[5]

And:

> In quo igitur homines exhorrescunt? Quem stupefacti dicentem intuentur? In quo exclamant? Quem deum, ut ita dicam, inter homines putant? Qui distincte, qui explicate, qui abundanter, qui inluminate et rebus et verbis dicunt et in ipsa oratione quasi quendam numerum versumque conficiunt, id est, quod dico, ornate.[6]

The roots of the Latin tradition of prose rhythm lie in the Greek world. Norden devotes his second appendix of *Die Antike Kunstprosa* to this subject,[7] and De Groot analyzes Greek prose rhythm and traces the lineage into Roman *numerus* in his *Handbook of Antique Prose-Rhythm*.[8] Cicero gives, between his treatises *Brutus* and *Orator*, a list of Greek predecessors, among whom Thrasymachus, Gorgias, Theodorus, and Isocrates merit mention.[9]

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vitiosum est dicere ornate, pellatur omnino e civitate eloquentia; sin ea non modo eos ornat penes quos est, sed etiam iuvat universam rem publicam, cur aut discere turpe est quod scire honestum est aut quod posse pulcherrimum est id non gloriosum est docere?"

[5] Cicero, *Orator,* 168.

[6] Cicero, *De Oratore*, 3.53

[7] Eduard Norden, *Die Antike Kunstprosa*, fünfte unveränderte auflage, Vol. 2, 2 vols. (Darmstadt: Wissenschaftliche Buchgesellschaft Darmstadt, 1958), pp. 909–960.

[8] De Groot, *A Handbook of Antique Prose Rhythm*; see especially the seventh lecture, pp. 119–131.

[9] For Thrasymachus, see *Orator* 40 and 175; for Gorgias, *Orator* 40, 165, 167 and 175, although in the latter three he is said to have achieved numerus through *concinnitas* and parallelism.

These Greek orators seem to have employed at least habitually, if not systematically, sets of rules regarding the interplay of light syllables with heavy ones.[10] At its most basic, this takes the form of avoiding three or more light syllables between heavy, as Demosthenes practiced, but the patterns formed by these light and heavy syllables, combined into metrical units and reused within a passage, especially within balanced members or at syntactic boundaries, provided more advanced effects.[11]

At exactly what point the Greek idea of prose rhythm becomes fashionable in Rome is unclear, but does seem to have been imported. Cicero denies that the elder Cato employed numerus,[12] although this view has been disputed in modern scholarship.[13] On the other hand, he praises Marcus Calidius, a slightly older contemporary and Atticist, for his prose "nec vero…soluta nec diffluentia, sed astricta numeris, non aperte nec eodem modo

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[10] To what degree classical Greek orators understood the rules underlying their practice is open to question. A P David, *The Dance of the Muses: Choral Theory and Ancient Greek Poetics*, pp. 155–156, asserts that the Hellenistic grammarian Dionysius Thrax first, among our surviving testimony, describes syllables in terms like our modern heavy and light. David further raises intriguing possibilities about the meaning of "long by position" in Greek poetic prosody, suggesting that the term may have, under the influence of Sophists concerned with the division between nature and convention, meant little more than "convention" in that *thesis*, the Latin *positio*, refers naturally to the division of the foot into thesis and arsis, where the natural length of a vowel can be subordinated to the convention of metrical necessity. Yet, the phenomenon of prose rhythm arises in the Sophistic period, which raises questions about the Greek theoretical conception of quantity, syllabic length, and prosodic theory presumably outside the strong beat of danced poetry. Interestingly, even as late as Quintilian, rhythm remains associated with corporeal movement (*Institutio Oratoria* 9.4.50–51), and Cicero feels he must warn against marking the rhythm of one's speech with the knuckles (*Orator* 59; see also perhaps *De Oratore* 3.220), perhaps an indication that the *positio* and *sublatio* were strongly felt even in prose rhythm.

[11] Frank Byron Jevons, *A History of Greek Literature: From the Earliest Period to the Death of Demosthenes* (New York, NY: Charles Scribner's Sons, 1894): pp. 431-432.

[12] Cicero, *Brutus* 68.

[13] J. B. Solodow, "Cato, *Orationes*, Frag. 75," adds to Eduard Frankel's earlier observations of clausulae. Cato's orations are, however, too fragmentary for meaningful statistical analysis.

semper, sed varie dissimulanterque conclusis."[14] Some Atticists, however, came to criticize prose rhythm,[15] which better suited the Asiatic style.

Ciceronian Rhythm

Iovita Rapicius, a sixteenth-century scholar writing on *numerus*, noted that Cicero seems to be informed by all the schools of rhetoric preceding him and to have evaluated each for criticism, and that his style seems to be a synthesis of what Cicero found best in all preceding concepts of *numerus*.[16] De Groot, in the twentieth century, traces Cicero's style to the Greek Asiatic rhetorician Hegesias of Magnesia, whose extant clausulae in De Groot's opinion mirror the preferences demonstrated in Cicero's practice.[17] Norden traces Cicero's style back to Demosthenes instead.[18]

Cicero himself sets out at least part of his thoughts on metrical prose in three works: *Brutus*, the *Orator*, and *de Oratore*. Of these, the dialogue entitled *Brutus* contains the least information, as it mentions *numerus* only in passing, as a distinguishing feature of oratory notable in the development of the art; of the remaining works, the *de Oratore* gives the briefer summary of Cicero's knowledge, placed in the mouth of Crassus and set

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[14] Cicero, *Brutus*, 274. Note that Brutus also was an Atticist, and several of Cicero's works appear to frame the discussion of *numerus* in such a way as to placate Atticist critics of Cicero's *numerus*; naming Calidius helps in this defense.

[15] Cicero, *Orator* 75–77 and 170 ff.

[16] Iovita Rapicius, *De Numero Oratorio*, pp. 83–84.

[17] De Groot, *A Handbook of Antique Prose Rhythm*, p. 126. Of this rhetorician's prose, Cicero himself comments at *Brutus* 286, "At quid est tam fractum, tam minutum, tam in ipsa, quam tamen consequitur, concinnitate puerile?" In *Orator* 226, Cicero claims that Hegesias avoided "numerosa comprehensio" and furthermore "non minus sententiis peccat quam verbis, ut non quaerat quem appellet ineptum qui illum cognoverit." If Cicero's practice indeed matches Hegesias, his theory does not betray it.

[18] Norden, *Die Antike Kunstprosa*, pp. 923–924.

during Cicero's youth; the later *Orator* contains more explicit statements of theory. In Crassus' time, according to Cicero, *numerus* was a new topic and not widely known; Crassus is setting forth a difficult art that serves as a criterion for distinguishing certain orators from others.[19]

The later treatise, the *Orator*, sets forth the details of this art more fully, yet not as an introductory textbook meant to treat exhaustively the art of oratory, or even the field of *elocutio* which takes up the bulk of the work. Rather, as Cicero addresses the work to Brutus, an Atticist, it is reasonable to take the *Orator* as a defense of his own theory of rhetoric.[20] As the contrast between the two styles of oratory represented in that debate largely manifests itself in *elocutio*, it is here that Cicero dwells; *numerus* was a salient line of demarcation and point of contention between Cicero and his Atticist critics, who eschewed rhythm.[21]

Cicero's Orator, though it is the most expansive of his works regarding rhythm, is not always clear or consistent, by virtue of its nature as part of a debate between schools of oratory rather than as a didactic treatise; yet, because of its depth, it forms the central core of Humanist and modern conceptions of Ciceronian theory, if not of Cicero's practice. The incoherence and insufficiency of the theory expressed, however, has long been noticed and lamented. Petrus Ramus, for example, sharply criticized Cicero's explanation

[19] Cicero, *de Oratore* 3.188.

[20] See especially 147 and 170.

[21] Cicero, *Orator* 75–77 and 170ff.

of prose rhythm in the *Orator* as unstructured, and Rapicius thought he purposefully crippled his own exposition.[22]

Cicero makes clear that *numerus*, as he understands it, applies to certain literary genres but not to others. Philosophy is not bound by it, Greek historians made their names without its aid, and poetry abides by different rules.[23] Rather, the proper sphere of *numerus* appears to be oratory; it is not a universal tool of expression but a specialized form of communication. Of the divisions thereof, Cicero attributes to epideictic oratory at once the greatest need for ornament and yet the most freedom in numerus, but his main concern in writing the *Orator* is to describe the techniques of forensic oratory; nevertheless he does not rule out the use of *numerus* in epideictic oratory, which class would later rise to the greatest prominence among learned men.[24] He dwells often on the importance of rhythm for rhetoric:

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[22] One ground of Ramus' attack is that Cicero uses the term *numerus* both as a genus, comprising *numerus*, *constructio* and *concinnitas*, and as one of the three species within that genus. Ramus, *Brutinae Quaestiones*, 100: "Haec tuipse tuo testimonio iudicioque confirmas: numerosa, ais, postea efficitur oratio non solum numero, sed etiam constructione et concinnitate. Est igitur, inquam, et constructio, et concinnitas numerus, aut numeri quiddam: quoniam orationem utraque numerosam facit. Facit orationem numerosam: est igitur efficiens caussa numeri. Quare cum omnium rerum cognitio scientiaque ex caussis promenda sit, in explicando numero caussae illae efficientes erunt adhibendae: non autem velut species diversae separandae erunt: quia duae primae construcito et concinnitas in tertia contineantur…tum vero non solum ex duobus generibus constructione et coniunctione pedum (quae erant duo) tria facis, addita concinnitate: sed etiam numerum (qui erat genus) in specie numerasti…." Cicero does not, however, in the passage Ramus cites, say that the genus of numerus comprises three species, but rather that the genus of *prosa numerosa* does: the adjective *numerosa* and the noun *numerus* are not equvalent. According to such an interpretation, *numerus* is one of three elements of *oratio numerosa* in the *Orator*, and the two terms are by no means equivalent. For Rapicius, see *De Numero Oratorio*, iv–v.

[23] Cicero, *Orator* 64; 31–32; 66–67.

[24] Cicero, *Orator* 37–38; 42, 65.

> Contiones saepe exclamare vidi, cum apte verba cecidissent.[25]

Cicero attaches similar importance to *numerus* in the third book of *De Oratore*:

> Quonam igitur modo tantum munus insistemus ut arbitremur nos hanc vim numerose dicendi consequi posse? Non est res tam difficilis quam necessaria; nihil est enim tam tenerum neque tam flexibile neque quod tam facile sequatur quocumque ducas quam oratio.[26]

He further equates the importance of *numerus* to that of metaphorical expression:

> Quibus utinam similibusque de rebus disputari quam de puerilibus his verborum translationibus maluissetis![27]

Narrowing of Ciceronian Rhythm and the Use of Historical Rhythm

Following Cicero's success, his techniques were widely copied and taught both in Roman antiquity and even in the Renaissance. De Groot finds after Cicero, however, an "impoverishment of favourite forms" as the degree of variation Cicero permitted himself becomes restricted through imperfect imitation and systemization, and the set of favored clausulae thus tends toward a smaller and smaller number.[28] By the so-called silver age, Tacitus seems to show a trace of frustration with this, as in his *Dialogus de Oratoribus* he complains that orators of his day lack variation in clausulae; he immediately afterwards names Cicero's infamous *esse videātur* as one of the most frequently repeated; Quintilian similarly complains about the frequency of *esse videātur*.[29]

Some Roman authors, however, though they showed a preference for certain rhythms, nevertheless do not conform to these restricted sets of clausulae: specifically, De Groot

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[25] Cicero, *Orator,* 168.

[26] Cicero, *De Oratore*, 3.176.

[27] Cicero, *De Oratore,* 3.197.

[28] De Groot, *A Handbook of Antique Prose Rhythm*, pp. 126–127.

[29] Tacitus, Dialogus de Oratoribus 22–23; Quintilian, Institutiones Oratoriae 9.4.73.

states that the distribution of syllables in Livy and Sallust is not random but also not related to Ciceronian rhythm. He sees in them not an imitation of Greek sources, but of the Latin hexameter.[30] Hans Aili describes *numerus* in Livy and Sallust as differing from Ciceronian clausulae in that Cicero preferred certain patterns of odd numbers (one or three) of adjacent short syllables surrounded by long syllables, while Sallust and Livy prefer pairs of short syllables. He further demonstrates that Sallust adopted these patterns in emulation of Thucydides, and that Livy came, in the course of writing the *Ab Urbe Condita,* also to favor this system, which he calls the *historical* in opposition to the *rhetorical* school.[31] Thus other schools of rhythmic practice existed, although they do not seem to have found the degree of success and wide acceptance that Ciceronian rhythm did. That Livy and Sallust's rhythmic practices were understood only in the twentieth century demonstrates the sensitivity of the statistical approaches developed by De Groot, Aili, and others, and their advances in developing a descriptive science of rhythm.

Accentual Rhythm (Cursus)

As the variety of accepted clausulae diminished and as speakers began to lose their sense of vowel quantity, the imitation of approved rhythmic models that took into account word boundaries led to the rise of *cursus*, accentual rhythm.[32] Since these models were based on Ciceronian quantitative rhythms, it is unsurprising to find that the new ac-

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[30] De Groot, A Handbook of Antique Prose Rhythm, pp. 126–127.

[31] Hans Aili, *The Prose Rhythm of Sallust and Livy* (Stockholm: Almquist & Wiksell International, 1979); for Sallust, see especially pp. 69–97, but especially pp. 73–75; for Livy, see pp. 98–126, but especially p. 105.

[32] Lausberg, *Handbook of Literary Rhetoric*, §1052, shows in an example drawn from Consentius how this shift took place.

centual patterns closely resemble those naturally resulting from the application of Ciceronian metrical rhythm. For instance, the *esse videātur* clausula bears the same word boundaries and stress accent as *dōna sentiāmus*, even though the former scans metrically as a *choreus* and *ionicus minor*, the latter as *choreus* and *dichoreus*. As Latin stress accent is conditioned by the weight of the penultimate syllable, meter and accent are causally linked at the penult, but the remainder of the word allows for variation.

The historical relationship of metrical to accentual rhythm, however, also conditioned the degree of variation that was exercised in later Latin as that history progressed. The agreement of metrical and accentual rhythm is now called *cursus mixtus,* which Hall and Oberhelman believe to have been the dominant mode of rhythmic ornament in the late empire, from the early third century at least into the fourth century, when purely accentual *cursus* begins to appear.[33] This too was limited to a set of imitated patterns.

Accentual *cursus*, and especially as codified for epistolary use, continued throughout the middle ages.[34] The accentual ornament became the associated with the Papal correspondence from the reign of Alexander II in the late eleventh century; later, it entered the *ars dictaminis*.[35] Both uses are strongly tied to the epistolary genre.

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[33] Ralph G. Hall and Steven M. Oberhelman, "Rhythmical Clausulae in the Codex Theodosianus and the Leges Novellae Ad Theodosianum Pertinentes," *The Classical Quarterly* (The Classical Association) 35, no. 1 (1985), p. 202.

[34] See Tore Janson, *Prose Rhythm in Medieval Latin from the 9th to the 13th Century* (Stockholm: Almquist & WIksell International, 1975), p. 35, for arguments for its continuity from the sixth century to the eleventh, when it gains momentum and not merely survives but dominates.

[35] See Tore Janson, *Prose Rhythm in Medieval Latin from the 9th to the 13th Century* (Stockholm: Almquist & Wiksell International, 1975), pp. 45–76 on the chancery, and pp. 77–103 on the *ars dictaminis*.

The practice of *cursus* continued into the early Humanist period; Witt traces the influence of *cursus* through Petrarch and even up to Leonardus Brunus Aretinus, a Florentine humanist who flourished in the early fifteenth century, although the data he presents on the latter is not presented as conclusive, nor are Witt's methods or conclusions clear.[36] Lindholm sees in Brunus the end of the *cursus* tradition and "einer der ersten Vorkämpfer" of Ciceronianism and Ciceronian rhythm.[37] Certainly after Brunus, however, Ciceronian quantitative rhythm is revived and promoted by some, although certainly not all, Humanists, who adopt it as a shibboleth of *eloquentia*, marking out Humanists from Scholastics, lawyers, and other adherents of the old *cursus* system.[38]

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[36] Witt, Ronald G. Witt, *'In the Footsteps of the Ancients': The Origins of Humanism From Lovato to Bruni* (Boston, MA: Brill, 2000) p. 514. Point (5) of his list of conclusions is that "Bruni's average of 59 per cent in his prose letters reflects, consequently, a degree of preference, if slight, for the accepted meters as period endings, and not, as Lindholm believes, a complete break with the practice." But, point (6): "…a percentage of *cursus* below 60 percent should be taken to mean that the writer was not consciously observing the standard *cursus*." Moreover, though Witt compares a set of authors from the Renaissance, he does not offer any control authors strongly suspected of having not observed *cursus* and against which one might judge what the expected frequency of *cursus* clausulae might be in non-rhythmic prose. Instead, he suggests that two of the authors he has included, Cermenate and Bruni, might represent the expected frequency of such rhythms in non-rhythmic prose. He never makes any claims of statistical significance with his results, nor is it clear exactly what *can* be claimed to be significant from his results. Still, even without tests of significance, the results for Rolandius, Petrarch's *Rerum familiarum* (taken from Lindholm), and Salutati (also from Lindholm) seem to point to the influence of *cursus* in early Humanists.

[37] Gudrun Lindholm, Studien zum Mittellalteinischen Prosarhythmus, p. 152.

[38] Núñez González offers caution: "Como puede apreciarse, no todos los humanistas son partidarios de la aplicación del metricismo en la prosa. Parece existir una línea divisoria entre ciceronianos y sus contrarios, pero no es tan simple la cuestión. Fox Morcillo propone la imitación del Arpinate, pero no este elemento del ornato." Juan María Núñez González, "Las cláusulas métricas latinas en el Renacimiento," p. 93.

Humanist Rediscovery of Prose Rhythm

Exactly when the Humanists rediscovered metrical prose rhythm is uncertain. Núñez González gives as possible antecedent conditions necessary for the recovery of the notion of metrical prose rhythm at least, if not for the reconstruction of the actual Ciceronian practice, Bracciolini's rediscovery in 1416 of the intact Quintilian containing the vital chapter 9.4, on prose rhythm, as well as the 1422 rediscovery of Cicero's *Orator*; he also mentions 1422 as a possible year in which the early Italian Humanist Gasparinus Barzizius Pergamensis (Gasparino da Barzizza, c. 1360–c. 1430) wrote his *De compositione*, which contains allusions to metrical prose rhythm and thus establishes an early date at which the concept of *numerus* was obviously known to the Italian humanists.[39] While knowledge of the basic outlines of prose rhythm was necessary for the study of the field, the received precepts alone were insufficient to reconstruct a theory of rhythm, and this insufficiency was itself clear to the Humanists: as Gasparinus Barzizius put his solution to the the problem,

> Mea itaque sententia orationes ipsae Ciceronis quibus utendum locis sit aut quando supersedendum, nos melius admonebunt quam ulla dicendi praeceptio aut ars a maioribus tradita.[40]

Among the Italian Humanists themselves, Paulus Cortesius (Paolo Cortesi), who lived from the later fifteenth century until 1510 and who around 1490 published *De hominibus doctis*, includes a discussion of the history of the rediscovery of *prosa numerosa* as he unfolds a Humanist narrative of history. Within this narrative, *eloquentia*, which had been the mark of Roman civilization, perished in the West with the fall of

[39] Juan María Núñez González, "Las cláusulas métricas latinas en el Renacimiento," p. 85.

[40] Quoted in L. Laurand, Études sur le style des discours de Cicéron, p. 220.

Rome to barbarian invaders; survived, however, under the Eastern empire; and was reborn in the West in 1396 when Grisolora (Manuel Chrysoloras) brought its study back to Italy from Byzantium. Eloquence is, in this narrative, an index of the intellectual tradition of Western society, a tradition unbroken between the ancient Romans and the Humanists, although translated in space from West to East and back, and unknown to the Humanists' medieval predecessors (*barbari*). Cortesius uses *prosa numerosa* as an index of this *eloquentia* and sees recovering the practice of *numerus* as a part of recovering the intellectual heritage of Rome.

Leonardus Brunus Arretinus (Leonardo Bruni of Arretino)

Proceeding with the students of Grisolora, whose arrival heralded the return of learning, Cortesius's creation, the interlocutor Antonius, immediately begins with Leonardus Brunus Arretinus (Leonardo Bruni of Arretino, 1369–1444), the same man whom Witt and Lindholm peg as a turning point between accentual and metrical rhythms:

> Magistro igitur Grisolora, plerique nostrorum hominum tanquam ex palaestra quadam impulsi se ad eloquentiae studium contulerunt. Quorum in primis laudandus est Leonardus Arretinus: hic primus inconditam scribendi consuetudinem ad numerosum quendam sonum inflexit et attulit hominibus nostris aliquid certe splendidius.[41]

Cortesius thus intimately ties the rebirth of eloquence in Florence and in Brunus in particular to the rediscovery of prose rhythm as a signal mark of the learned man; the term *splendidius* is one of Brunus' own terms, as will shortly be seen. The characters of

[41] Cortesius, De Hominibus Doctis, 20.

this dialogue, however, note that Brunus lacked models for emulation and thus also for ideal eloquence.[42]

Brunus himself writes of the importance of metrical prose for the truly learned scholar in his *De Studiis et Litteris Liber ad Baptistam de Malatestis*, in which he outlines for Baptista de Malatestis (Battista di Montrefelto) a course of study suitable for a woman seeking *eloquentia* and *excellentia*.[43] While exhorting Baptista to study, and especially to study Cicero, he justifies the importance of learning syllabic quantities:

> In prosa quoque oratione eadem ista cognitio scribenti dictantique necessaria videtur. Neque enim, si multitudo non sentit, propterea soluta in oratione pedes non insunt; sed quod delectat aures, quod sono demulcet, inde est.[44]

This can only point to his knowledge that prose rhythm was originally based in syllabic lengths, not in accentual patterns. Brunus continues with a short survey of the theory of classical prose rhythm from Aristotle through Cicero, and largely taken nearly verbatim from Cicero's *De Oratore* and *Orator*.[45] There is not, however, enough information in the *De Studiis et Litteris Liber* to construct a working model of this system: it is not a technical treatise on the art, nor is it clear that Brunus has thought out a system of

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[42] Cortesius, *De Hominibus Doctis,* 20–24.

[43] Leonardus Brunus, "De studiis et litteris liber ad Baptistam de Malatestis," 1 and 4 especially: "Homini quidem ad excellentiam illam, ad quem ego nunc te voco, contendernti in primis necessariam puto non exiguam neque vulgarem, sed magnam et tritam et accuratam et reconditam litterarum peritiam, sine quo fundamento nihil altum neque magnificum sibi aedificare quisquam potest." The use of the common gender here is striking after the previous three paragraphs; the statement is generalized to emphasize the importance of *eloquentia* for all people who wish to attain to excellence, in contrast to those "qui nunc theologiam profitentur."

[44] Ibid., 11.

[45] Exempli gratia: Brunus on Aristotle: "Itaque probat ille quidem paeana maxime. Is autem est duplex…" (11); Cicero on Aristotle: "Probatur autem ab eodem illo maxime paean, qui est duplex…" (*De Oratore* 3.183).

prose rhythm any further that what he picked up from the *Orator*. This seems to mirror Cortesius' criticism that Brunus benefitted from his learning but did not achieve true eloquence, in this case a true imitation of Cicero.

The prime importance that Brunus assigns these rules, however, is evident from his explicit statement immediately following his summary of Ciceronian prose rhythm and concerning the value of observing these precepts:

> Erunt fortasse complures quibus mea ista cura nimis anxia videatur. Sed meminerint me de ingenio loqui magno et summa omnia de se pollicenti. Quare mediocres incedant, vel reptent potius, ut possunt. Ad summum certe nemo perveniet, qui non fuerit horum omnium et usu tritus et disciplina imbutus. Denique mea haec de litteris sententia est: nihil ut ignoret quod in usum venire soleat, et praeterea nitorem elegantiam deliciasque omnes in oratione sectetur, sitque illi ad omne genus scribendi mundus quidam et ornatus ac (ut ita dixerim) abundantissima domi supellex, quam promat, cum opus sit, et in lucem educat.[46]

Thus for Brunus, the ornament of metrical prose, along with the proper choice of vocabulary, orthography and phonology, is central to an aspiring student's excellence with respect to *litterarum peritia*; the remainder of the work is dedicated to the studies necessary for *rerum scientia*. The two are inextricable, as Brunus notes:

> Haec enim duo sese invicem iuvant mutuoque deserviunt. Nam et litterae sine rerum scientia steriles sunt et inanes, et scientia rerum quamvis ingens, si splendore careat litterarum, abdita quaedam obscuraque videtur.[47]

Brunus thus considers *splendor litterarum*, in which prose rhythm plays a key role, half of the very definition of true erudition; his own works redefine the speech of the erudite man and shift the paradigm of prose ornament from accentual rhythm to metric.

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[46] Leonardus Brunus, "De studiis et litteris liber ad Baptistam de Malatestis," 12.

[47] Ibid., 29; the first sentence ends in a *dicreticus*, and the second in an *esse videātur* type clausula.

Johannes Antonius Campanus (Giovanni Antonio Campano)

To return to Cortesius, *prosa numerosa* again appears prominently as he tells of Johannes Antonius Campanus (Giovanni Antonio Campano, 1429–1477), whose style Cortesius' Antonius describes with words not dissimilar to those of Brunus:

> Hoc in viro primum apparuit florentius ac splendidius quoddam orationis genus…Orationes autem eius valde probantur: declarant enim, et ubertatem ingenii et vim quandam naturalem multis esse oratoriis laudibus excultam. Utebatur facili et ita candido quodam scribendi genere ut numeris quibusdam adstrictus fluere videatur; quamquam numerus orationis abest ingeniis nostris, ita tamen imitandi quadam industria orationem inflexerat ad sonum ut cadat plerumque iucunde et numerose.[48]

Antonius has no doubts as to whether or not Campanus attempted the practice of metrical clausulae, but he does in the final words hesitate to say that Campanus has mastered the Ciceronian system. The true nature of the system lay beyond the limits of contemporary knowledge, but Campanus had made his orations please the ear. The Alexander persona picks up on this hesitation and adds his doubts as to whether or not a system of numerus should be used. He raises the objection that some scholars claim Cicero did not use a system but rather relied upon his ear's natural judgment. Antonius replies:

> Quod tam perversum est iudicium istorum hominum ut in eo nullum esse numerum affirment, quem tam multa praecepta de orationis numero reliquisse videant? Mea quidem sententia est orationem Latinam numerosa quadam structura contineri oportere quae adhuc omnino a nostris hominibus ignoretur.[49]

The first half of the response brings up again the theory of prose rhythm, of which the Humanists were aware through Cicero and felt certain was in him systematic, but the second points to the mystery surrounding the actual practice: men like Brunus and Cam-

[48] Cortesius, De Hominibus Doctis.

[49] Cortesius, De Hominibus Doctis.

panus had Cicero's notes from such works as the *De Oratore* and the *Orator* in hand, as well as Quintilian's more explicit instructions, but the interruption of the middle ages had removed the possibility of the kind of detailed instruction necessary for confidence in the completeness of the precepts as handed down and in practical imitation.

That the personae repeatedly profess ignorance as to the true nature of the Ciceronian system or practice interested Sandys enough to conjecture that "…the author had discovered for himself the importance of a rhythmical structure in the composition of Ciceronian prose…."[50] This would explain the nature of the work: Cortesius shows his own erudition in an act of self-praise, comparing the degree to which he's relearned the ancient knowledge of Cicero to that to which predecessors considered wise had attained.

Baptista Guarinus (Battista Guarino)

Another pupil of Grisolora was Guarinus Veronensis (Guarino of Verona), whose son, Baptista Guarinus (Battista Guarino, 1434–1513), wrote in 1459 a work *De Ordine Docendi et Studendi*. He emphasizes the importance of learning to measure syllables: "…coniungenda erit syllabarum versuumque cognitio, cuius tanta est utilitas, ut apte dicere ausim neminem posse iure doctum appellari cui haec ignota fuerit."[51] Some part of that utility lies in poetry and proper enunciation, but also in *numerus*:

> Nec in carmine tantum ea prodest, sed et in ea quam vocant rhetores numerosam orationem, quae pedibus metricis constat, quam qui ab his scriptam intelligere non potuerit, multo certe minus eam ipse faciet.[52]

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[50] John Edwin Sandys, "Review of *Die Rhythmem der Asianischen und Römischen Kunstprosa,* von Friedrich Blass," pp. 85–88.

[51] Baptista Guarinus, "De ordine docendi et studendi," 14.

[52] Ibid., 15.

Thus one goal of Guarinus' educational program is to produce students capable of writing *numerosa oratio*, by which prose with attention to metrical rhythm is meant. By the mid-fifteenth century, prose rhythm had been sufficiently reestablished to be taught.

Prose Rhythm as a Subject of Humanist Study

Sandys points out that the German Gaspar Scioppius had observed five preferred kinds of Ciceronian clausulae in 1597, at the end of the sixteenth century.[53] He was hardly the first, however, to delve beyond the introduction offered in the *De Oratore* and *Orator*, to explore a range of ancient scholarship on prose rhythm, and to investigate Cicero's actual practice. The Humanist interest in grammar resulted in countless grammatical treatises, and it is no surprise to find that several deal especially with prose rhythm. These texts give a window into the attitudes toward prose rhythm prevalent in the sixteenth century and the degree of systematization and elaboration of the theoretical apparatus attendant upon the practice of prose rhythm.

Iacobus Ludovicus Strebaeus (Jacques-Louis d'Estrebay)

The metrical prose rhythm had clearly reached France by the sixteenth century: the French grammarian Iacobus Ludovicus Strebaeus (Jacques-Louis d'Estrebay, 1481–c. 1550), in his 1538 treatise *De Electione et Oratoria Collocatione Verborum,* presents a structured and systematic approach to the Ciceronian-Quintilianian theory of rhythm.[54]

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[53] John Edwin Sandys, "Review of Die Rhythmem der Asianischen und Römischen Kunstprosa, von Friedrich Blass," *The Classical Review* 21, no. 3 (May 1907): p. 86.

[54] Wilkinson remarks, "The subject of classical prose rhythm was much discussed by Renaissance scholars, but it is only with Strabaeus [sic] in 1529 that we get a reasonably accurate account even of Ciceronian clausulae" (*Golden Latin Artistry,* p. 135). The

He considers glory (*gloria*) the prize of the proper arrangement of words, but various obstacles stand in the way of learning this skill and thus achieving that glory: "ingenii sterilitate, aut inerti desidia, aut inopia magistrorum, aut opinionum pravitate."[55] The *inopia magistrorum* and *opinionum pravitate* reveal that knowledge of *numerus* was not by 1538 universally available or approved; Strebaeus dedicates the remaining six pages of the preface to the second book, concerning arrangement, to refuting this lack of approval in a vehement diatribe making extensive use of an imaginary interlocutor who takes a pragmatic stance, questioning the value of education in elegance and collocation when other sciences seem to bring greater profit to the state and to the individual;[56] Strebaeus answers that the student who does not learn about syllabic lengths will never achieve any knowledge in any field, "neque ullam philosophiae particulam, neque eloquentiam, neque

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name does not appear in any of the lists of modern or ancient works cited in his book, and so whether the spelling indicates an error on the part of the printer is unknown. Oberhelman and Hall follow this spelling at "A New Statistical Analysis of Accentual Prose Rhythms in Imperial Latin Authors," *Classical Philology* (The University of Chicago Press) 79, no. 2 (April 1984), p. 118. Neither Wilkinson nor Obehelman and Hall name the titles of any of Strabaeus' works or give any details that help identify their author with Strebeus, though the name Strabaeus does not appear anywhere outside of these two works, to the best of my knowledge. I assume the identity for the purpose of allowing Wilkinson to introduce the relative importance of Strebaeus. Núñez González believes that Strebaeus was the first early modern scholar to have written a treatise on prose rhythm; he further notes that the work was in wide circulation and that Strebaeus was not a hardline Ciceronian (pp. 90–91).

[55] Strebaeus, De Electione et Oratoria Collocatione Verborum, p. 128.

[56] Ibid. p. 129: "Quid opus est," inquiunt, "elegantia verborum? an quid ille sermo tam cultus? cur verba seligimus? cur in coagmentatione syllabarum, et in dimetiendis brevibus et longis consenescimus? Quid mendicamus in re tenui? Verba negligamus, et quadratam orationem: scientiam rerum magnarum comparemus. Demus operam Reipubicae. Necessarios adiutemus, et amicos." The student's complaints are, curiously enough, quite metrical: for example, "Reipublicae" is a dochmius, or a dicretic considering the long syllable before it; it is followed by another dochmius, "necessarios"; the final phrase, "adiutemus et amicos," gives the paean and spondeus of "esse videatur." Considering the abuse about to be heaped upon him, the interlocutor seems to have learned his subject well.

prima rudimenta literarum, neque ullam omnino disciplinam.… sed quoniam rudis es et ineptus, te docti execrantur, te prudentes in stultis numerant…"[57] On the other hand, "Qui dicit eleganter et composite, ratione et sermone fruitur ut summus vir."[58] Strebaeus' answer shows the importance that attaches to eloquence, a perception of the need to defend his opinion against pragmatic objections, and similarities to the questions law students and merchants might ask of Humanist education in general; the connection with the Humanist polemic against Scholasticism, the last wave of *barbari* standing in the way of the Humanist revival of ancient learning, becomes evident in the following pages.

For Strebaeus, the art of composing involves connecting words fittingly, observing *pedes* or metrical feet, and modulating the structure of the period.[59] To illustrate the point, he gives two example definitions of the word *vox* given by a "dialectici cuiusdam," contrasted with Strebaeus' own revision; he censures the former's definition on metrical grounds, for ending in a double dactyl in one part and in two spondees in the other.[60] More importantly, however, is that Strebaeus here faults the Scholastic dialectician's style, holding rhythm, especially "numerosae conclusiones," to be a distinguishing feature of Humanist prose. This brings the more than stern rebuke of the pragmatic student earlier given into the light of Humanist polemic against Scholasticism and *numerus* a criterion of the Humanist movement.

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[57] Ibid., p. 130. By the next page, the student who fails to see the importance of measuring syllables is a disgrace to his city, "omnium turpissimum," values the flesh more than the mind, and is equal to the "disciplinae cultoris osores accerrimi." On the next, the wayward student hides in the shadows, "semper inglorius futurus, nisi tua te scelera fecerint insignem."

[58] Ibid., 135. The rant does not end with the preface but begins anew in the first chapter of the second book.

[59] Ibid., 137.

[60] Ibid., p. 137. The first half actually ends in two dactyls and a cretic.

Iovita Rapicius (Giovita Rapicio)

Iovita Rapicius (Giovita Rapicio, 1476–1553), the educator of Chiari and Brescia in Italy, makes the connection with the Humanist narrative of history in the preface to his five books *De Numero Oratorio*, originally published in 1554.[61] He begins with an outline of the natural decay of all things, including ancient knowledge, but shines with hope at the thought that recent work by a wide variety of Europeans has led to a resurgence of eloquence and knowledge of all the arts.[62] He claims to write to elucidate a field in which much has been written, but little clearly explained, including by the ancients.[63] In fact, he believes instead that Cicero purposefully neglected and hastily concluded the sections on *numerus* in the *Orator* and the *de Oratore*; similarly, Aristotle's brevity is excused by his gravity and the scope of his work, while other grammarians seem to Rapicius to be writing reminders of principles that students' teachers should have covered in class: study guides or lecture notes.[64] Despite this, Rapicius manages to assemble precepts from a startlingly large range of ancient authorities and combines them with his own observa-

[61] Núñez González calls Rapicius the author of the second treatise on prose rhythm (p. 91).

[62] Rapicius, *De Oratorio Numero* i–ii: the pages of the preface are not numbered in Birckmann's 1582 edition; I substitute here roman numerals. Concerning the Renaissance: "Longe enim praestat gaudere, quod iam dudum non Romani modo, et Itali, sed Hispani, Germani, Galli, et Britanni illi toto orbe divisi, hanc tantam bonarum artium ruinam certatim fulcire contendunt, ac eo rem paulatim iam perduxerunt, ut non modo ad eloquentiam, sed ad omnium prorsus bonarum artium scientiam latior ac minus impedita via patere videatur…" (p. ii).

[63] Rapicius, *De Numero Oratorio*, "…quoscunque vel antiquorum, vel recentiorum tractatus ea de re potui invenire, diligenter legi: et ut quosdam ex iis artis rhythmicae peritos negare non ausim; ita illud, nihil reluctante conscientia, affirmaverim, omnes prorsus perverso, nescio quo fastu ductos, coniurasse, ne rudes et imperitos docerent…" (p. iii).

[64] Rapicius, *De Numero Oratorio*, pp. iv–v.

tions of Ciceronian practice. The value of his work, however, is questionable: Laurand believed he did not understand Cicero's practice well.[65]

Marcus Antonius Muretus (Marc-Antoine Muret)

Marcus Antonius Muretus (1526–1585) enters into the history of prose rhythm at the age of 25, in 1552, with his oration *De Dignitate ac Praestantia Studii Theologici*, held in Paris on the fifth of February. Two years later, he would leave France for Rome under a moral cloud cast upon him, apparently falsely.[66] And so, from 1554 onwards, Muretus may effectively be counted among the Italian Humanists, where he established a reputation for himself as an excellent orator in the Ciceronian model, a reputation that has survived to the present among those who study Renaissance Humanism: Muretus has been called "the most accomplished Ciceronian, with the purest style, since the Renaissance."[67]

Muretus' contributions to letters include forty seven orations in two volumes, as published in his *Opera Omnia* by Frotscher and Ruhnkenius; a number of scholarly notes on ancient authors, the *Variae Lectiones*; and an extensive collection of correspondence with Humanists and royalty, collected in three major volumes and an additional supplement of correspondence with Dionysius Lambinus, another French Humanist.[68]

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[65] L. Laurand, *Études sur le style des discours de Cicéron*, p. 225.

[66] Petrus Lazerus, *Diatriba de Vitae et Scriptis M. Antonii Mureti*, Vol. 1, in *M. Antonii Mureti Opera Omnia* (Leipzig: Serigana Libraria, 1834); p. 9 summarizes evidence for his innocence.

[67] D. F. S. Thomson, "On the Latin Style of Some French Humanists," in *Crossroads and Perspectives: French Literature of the Renaissance; Studies in honour of Victor E. Graham* (Geneva: Librairie Droz S.A., 1986); p. 90.

[68] John O'Brien, in his article "Denys Lambin's *Nichomachean Ethics*," claims to detect metrical clausulae in Lambinus' works, but offers no empirical evidence for the claim.

Muretus himself makes explicit mention of *prosa numerosa* in two orations. In the earlier of the two, "De Utilitate ac Praestantia Litterarum Humaniorem adversus Quibusdam earum Vituperatores" of October 8, 1555, he directly addresses the importance of rhetorical education, mentioning only *copia* and *numerus* directly as rhetorical techniques:

> Quid, cum ornate ac copiose loquendi praecepta tradimus, ludere videmus, an docere, quae semper principem locum in omni bene instituta civitate tenuerunt? An nescimus, eloquentiam a gravissimis auctoribus rerum omnium reginam vocari? Haec enim est illa virtus, quae quamlibet in partem arbitratu suo flectit audientium animos, eosque pulcritudinis suae splendore obstupefactos, quibusdam velut habenis numerosae orationis regit.[69]

Muretus seems to share Strebaeus' concern for defending the teaching of rhetorical techniques against detractors concerned with pragmatics; he also emphasizes the power of prose rhythm to bypass reason by harnessing a halo effect: the beauty of the speech, which is in part a result of *numerosa oratio*, convinces the audience of the correctness of the speaker's position. In this kind of pragmatic view of rhetoric's power, Muretus departs from Strebaeus.

In the oration "Cum Explanaturus esset *Aeneida* Virgilii" of the eleventh of November, 1579, Muretus adduces the value of poetry to the education of an orator and ranks *numerus* as the highest *ornamentum*:

> Numerose autem dicere, quo nullum maius elocutionis ornamentum est, nemo non poterit, nisi qui aures habeat in numeris poeticis diu multumque tritas et exercitatas.[70]

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[69] Marcus Antonius Muretus, "Oratio iii" in Vol. 1 of Orations, *Opera Omnia*, ed. C. H. Frotscher and D. Ruhnkenius, Vol. 1 (Lepizig: Serigiana Library, 1834).

[70] Marcus Antonius Muretus, "Oratio 11" in Vol. 2 of Orations, *Opera Omnia*, ed. C. H. Frotscher and D. Ruhnkenius, Vol. 1 (Lepizig: Serigiana Library, 1834).

The importance of prose rhythm for Muretus is thus evident; the form it takes is likely to be Ciceronian, given Muretus' and the Humanists' proclivity towards emulation of Cicero; along these lines, Sandys, treating of the history of metrical prose rhythm, remarked at the opening of the twentieth century, "The practice of Cicero is in general followed in the Orations of Muretus," but he gave no evidence to support his position.[71] Still, his sentiment agrees with that of other scholars reading Muretus:

> Anyone familiar with the Latin language who comes fresh to an extensive reading of Muretus from perusing the works even of his fellow-scholar Lambin, and *a fortiori* those of the older and less specialized Humanists such as Budé, is bound to feel an instant conviction that he or she is dealing with one who has so totally absorbed the mind, as well as the vocabulary (down to the remotest *hapax legomena*) and manner of Cicero that he cannot help writing as Cicero does.[72]

Still other scholars, however, have questioned Muret's understanding of prose rhythm: Laurand says "Mais ni Rapicius ni même Muret ne connaissent bien les clausules de Cicéron, pas plus que ce Scioppius dont Blass a rappelé les travaux."[73] An empirical examination of Muret's practice in employing prose rhythm will help put to rest this question of the degree to which Muret understood Cicero's theory and practice, and which of the two he followed.

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[71] John Edwin Sandys, "Review of Die Rhythmem der Asianischen und Römischen Kunstprosa, von Friedrich Blass," *The Classical Review* 21, no. 3 (May 1907). p.86.

[72] D. F. S. Thomson, "On the Latin Style of Some French Humanists," in *Crossroads and Perspectives: French Literature of the Renaissance; Studies in honour of Victor E. Graham*, 77–100 (Geneva: Librairie Droz S.A., 1986). p. 97

[73] L. Laurand, *Études sur le style des discours de Cicéron*, p. 225. Also see note 4 of the same page: "Muret ne touche d'ailleurs la question qu'en passant." He does not mention the passages I have brought forth above, but one could easily consider these mentions made *en passant*.

CHAPTER TWO: METHODOLOGY

Given that Ciceronian prose rhythm was quantitative and places strong emphasis on metrical rhythm within clausulae, that Humanist rhetoric embraced Cicero and made his prose rhythm a marker of eloquence, and that Muretus was a Humanist orator engaged in demonstrating Ciceronian eloquence while upholding the principles of Humanism, a logical hypothesis might be that Muretus employed *numerus*, or metrical, prose rhythm in at least his orations, and mostly likely *numerus* like Cicero's. Further, given the Humanist opposition to medieval practices, a logical secondary hypothesis might be that Muretus did not seek to employ *cursus*, or accentual rhythm.

Modern statistical methods can detect whether a speaker prefers or avoids certain rhythmical patterns, and thus a statistical approach is appropriate to investigate Muretus' practices. Since the 1970's, the internal method of comparison, or the comparison of the author's actual, or observed, combinations of syllables or words with what could be expected from a random distribution of the same elements, has become standard practice.[74] A statistical goodness-of-fit measures the degree of divergence of the observed and expected data, resulting in a measure of the probability that the observed rhythms are not the result of a random collocation of constituent elements.

Prior to the development of the internal method of comparison, the proportions of rhythms observed in an author were compared to those observed in other authors, both

[74] Janson first devised the method of internal comparison to study medieval *cursus* rhythm in 1975 in *Prose Rhythm in Medieval Latin*; see especially Chapter 2, "Questions of Method," pp. 10–34. Aili adapted the method for the study of quantitative rhythm in 1979 in *The Prose Rhythm of Sallust and Livy*; see especially Chapter 2, "Questions of Method," pp. 17–50. I largely follow Janson and Aili's methods in what follows.

those believed to use certain kinds of rhythm and to control authors assumed not to have sought prose rhythm. This external method of comparison has the drawback of being able to detect a system of rhythm only if it is anticipated in the authors selected for comparison; that is, if the type of rhythm is already known and selected for in the comparative study. The internal method, in contrast, can detect any system of rhythm and give the probability that the rhythm is non-random. Nevertheless, an external comparison can serve as a final check to establish, in the case of Muretus, whether any rhythm that is found is indeed Ciceronian.

Principles of Sampling

Metrical Data Collection

Cicero and others, in expounding rhythmic theory, suggest that rhythm exists throughout the various parts of the sentence, including at comma and cola boundaries, but also that the final few syllables of a sentence are the most important. As sentence boundaries are punctuated by modern editors and usually well defined by syntactic boundaries, they provide a convenient point of reference from which to measure clausulae extending backwards from them.

The length of the clausula is not clearly defined in what theoretical literature exists. Quintilian provides an upper bound of six syllables and a lower bound of four;[75]

[75] *Institutio Oratoria* 9.4.95–96: "Retrorsum autem neque plus tribus, iique si non ternas syllabas habebunt, repetendi erunt (absit tam poetica observatio) neque minus duobus (alioqui pes erit, non numerus). Potest tamen vel unus esse, dichoreus si unus est, qui constat e duobus choreis, itemque paean, qui est ex choreo et pyrrhichio (quem aptum initiis putant), vel contra, qui est ex tribus brevibus et longa…." But, Quintilian has already denied that tetrasyllables like the *paean* and *dichoreus* can be called feet (9.4.89); this does, however, provide a lower boundary of four syllables.

Rapicius' examples range from three to ten syllables, but he includes uncommon cases.[76] Among modern investigators, De Groot took eight syllables as a basis for investigation; Aili took eight for his principal authors and six for secondary authors, the latter number of which accords with Quintilian's theory.[77] Aili's investigation established the Ciceronian preferences within six syllables, except in the cases of the *choreus* preceding an *esse videātur* type clausula, which requires eight, and the analogous *creticus* and *dichoreus* or *spondeus iteratus*, which require seven.[78] Yet, within six syllables, these forms too showed significant departures from a random allocation of syllables, and thus six syllables forms a suitable length for establishing whether an author used Ciceronian *numerus*.

The ultimate syllable, according to Cicero, is *anceps* in prose as in poetry, a matter that Quintilian disputes but for which he also offers support and an indication that contemporary practice was to treat the syllable as such.[79] Regardless, eliminating the final

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[76] Rapicius, *De Numero Oratorio*: for trisyllabic clausulae, see p. 64, "nata ex" and "prima vox"; for decasyllabic clausulae, see p. 79, "magnitudine periculosum."

[77] Albert Willem de Groot, *De numero oratorio Latino commentatio*, p. 18. Hans Aili, *The Prose Rhythm of Sallust and Livy*, p. 13. Aili's reasons for choosing to limit his investigation to six syllables are pragamatic rather than theoretical: thirty two combinations of syllables (Aili's six syllables, discounting the ultimate) is "a manageable number," while 256 (all eight of De Groot's syllables, including the ultimate) is "unwieldy" (pp. 18–19).

[78] Aili, The Prose Rhythm of Sallust and Livy, pp. 56, 62–63, 65.

[79] Cicero, *Orator,* 217: "…postrema syllaba brevis an longa sit ne in versu quidem refert." Quintilian, *Institutiones Oratoriae* 9.4.93–94: "Neque enim ego ignoro in fine pro longa accipi brevem, quia videtur aliquid vacantis temporis ex eo quod insequitur accedere: aures tamen consulens meas intellego multum referre verene longa sit quae cludit an pro longa. Neque enim tam plenum est 'dicere incipientem timere' quam illud 'ausus est confiteri': atqui si nihil refert brevis an longa sit ultima, idem pes erit, verum nescio quo modo sedebit hoc, illud subsistet. Quo moti quidam longae ultimae tria tempora dederunt, ut illud tempus quod brevis e loco accipit huic quoque accederet." De Groot, *A Handbook of Antique Prose Rhythm*, Vol. 1, pp. 121–123, lists arguments for and against considering the quantity of the final syllable and points out that, for Greek clausulae at

syllable from this initial analysis both halves the complexity of the investigation and removes any uncertainty as to whether an otherwise light final syllable becomes heavy under the influence of the following syllable.[80] Thus, only five syllables are effectively under investigation, which means a total of 2^5, or 32, possible clausulae.

Certain edge-case patterns are also, of practical necessity, to be excluded, based on uncertainty as to the phonotactic principles to which Muretus might have adhered. In this list I follow and add to Aili's chapter 2.5.[81]

1. Cases of possible hiatus, elision, or aphaeresis.[82]
2. Contraction internal to a word, as in the possible contraction between the lexical and grammatical morphemes in the second declension, as in *fīliī* vs. *fīlī*, and across an intervocalic *-h-*.
3. Consonant clusters that might either wholly form the onset of the following syllable or be divided between that onset and the coda of the current syllable. This may occur if the nucleus is followed by a stop and liquid, regardless of word boundary[83] or if a word-final vowel meets a syllable beginning with a sibilant-stop combination or a letter derived from Greek and representing a sibilant-stop or stop-sibilant combination (*z* or *x*).

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least, there is statistical evidence to demonstrate that the length of the ultimate syllable is significant; he nevertheless counts the syllable as *anceps* for most of his calculations.

[80] Hans Aili, The Prose Rhythm of Sallust and Livy, p. 18.

[81] Hans Aili, The Prose Rhythm of Sallust and Livy, p. 48–49.

[82] Aili does not reject aphaeresis; I am not so bold in making the same assumption of a sixteenth century author. Cicero, *Orator* 152, explicitly rejects hiatus, but that is not sufficient to show that Muretus did the same over 1,500 years later.

[83] Aili distinguishes between stop/liquid combinations interior to words and across word boundaries; for the sake of security, I do not.

4. Word-final *-o* of uncertain length, either in the first person singular of a verb, a third-declension nominative singular noun, a numeral, the pronoun ego, or any adverb indicated as ambiguous by Lewis and Short.
5. Where the quantity is uncertain due to morphosyntactic considerations, as in verbs whose perfect tenses are indistinguishable from the present except by stem vowel length and words with syllables of metrical quantity according to Lewis and Short.
6. Lists of names, quotations from other works and other authors, and text from other languages.[84]
7. Conjectures, as they are not of certainty the author's intended words but rather the most reasonable guess provided by the text's editor, and thus may potentially reflect the editor's style rather than the author's.
8. Sentences of fewer than seven syllables, as this would potentially make the entire sentence a final clausula.

All cases not to be excluded are to be collected as data. In fact, I collected all clausulae obeying the eight rules set forth above from all orations of the two *volumina* included in the first volume of Frotscher's *M. Antonii Mureti Opera Omnia* (*N*=2328 clausulae) and all the epistles (*N*=1317 clausulae).

[84]Aili here only rejects lists of names. The rejection of quotations seemed appropriate to add to this list inasmuch as a quotation reflects not Muretus' style but that of the author quoted. Muretus does use Greek at times; that language may have a different bias with respect to syllabic weight, and would thus throw off the expected frequency of heavy or light syllables.

Accentual Data Collection

Accentual data consists not of syllables but of words: *cursus* stretches from the accentual prominence of the penultimate word to the end of the sentence and considers the typological class of the penultimate word (oxytone monosyllable, paroxytone, or properoxytone) and the typological class and syllabic length of the ultimate word. Thus there is no methodological or pragmatic question as to the number of syllables to collect, but rather the medieval theories of *cursus* dictate the kind of data to be collected. Certain restrictions do apply, however, as in the case of the exclusions observed in collecting metrical data:

1. Cases of possible hiatus, elision, or aphaeresis.
2. Contraction internal to a word, as in the possible contraction between the lexical and grammatical morphemes in the second declension, as in *fīliī* vs. *fīlī*, and across an intervocalic *-h-*.
3. Where the quantity of the penultimate syllable is uncertain due to morphosyntactic considerations, as in verbs whose perfect tenses are indistinguishable from the present except by stem vowel length and words with syllables of metrical quantity according to Lewis and Short.
4. Lists of names, quotations from other works and other authors, and text from other languages.
5. Conjectures, as they are not of certainty the author's intended words but rather the most reasonable guess provided by the text's editor, and thus may potentially reflect the editor's style rather than the author's.
6. Sentences whose entirety is represented in the clausula.

Moreover, while data is presented for words of any syllabic length, the relative infrequency of ultimate words of more than four syllables makes their analysis less certain than for those of fewer syllables, and thus they are excluded from the statistical analysis. Final monosyllables and disyllables are also problematic: it is unclear whether some of them, such as *est*, have enclitic or proclitic accents, or if they stand independently; thus it is safest to dismiss them from analysis. What remains, final trisyllables and tetrasyllables, corresponds well to the basic outlines of medieval cursus theory; that the sum total of the trisyllables and tetrasyllables far exceeds those of longer or shorter words, and in fact makes up the bulk of the data, is evident from Table 8.2 and Table 8.12.

As with the metrical clausulae, all accentual clausulae conforming to the rules laid out in this section were collected, exhausting both the orations and the epistles. The oratorical corpus yielded 2281 data points, of which 1151 were trisyllables or tetrasyllables; the epistolary, 1319 in total and 772 trisyllables or tetrasyllables.

Observed and Expected Frequencies

In Metrical Data

The probability of an event is its likelihood, usually represented on a scale from 0 to 1, from 0% chance (impossibility) to 100% chance (absolute certainty). A syllable may be marked either long or short, and is thus a binary category, like a coin that tossed could turn up heads or tails. Thus, absent any other considerations, the probability of a single, random syllable having one value or the other is 1 out of 2, or 0.5.

The likelihood of a number of events happening is the product of the probability of each individual event happening: the chance that six coins will turn up all heads is the product of the individual coins' chance of coming up heads:

$$p_{total} = p_1 \cdot p_2 \cdot p_3 \cdot p_4 \cdot p_5 \cdot p_6$$
$$p_{total} = 0.5 \cdot 0.5 \cdot 0.5 \cdot 0.5 \cdot 0.5 \cdot 0.5$$
$$p_{total} = 0.015625$$

Syllables, however, unlike coins, exist in larger systems, namely words, and thus he likelihood of a syllable's length depends to some degree on the language's predisposition to using long syllables in certain positions.[85] Thus it is necessary to determine the probability that one might expect a long or short syllable to fall into each position, or the *expected frequency* of each pattern, to compare with Muretus' actual practice, the *observed frequency*.

The expected frequency is calculated from the observed data. For each possible syllabic position, counting backwards from the ultimate position, the total number of heavy and light syllables in the entire sample is calculated; thus, in the entire population of 2328 oratorical clausulae, there are 1626 heavy syllables (*N*) in the penultimate position and 702 light; around 70% are heavy and around 30% light, so the probability (*p*) of any syllable in the penultimate position being heavy is about 0.7, and of being light, about 0.3. The full data is given below.

[85] In Muretus' orations, at least towards the ends of sentences as shown by the averages in Table 2.1, heavy syllables outnumber light by 575:425 or 23:17, about 3:2. Aili finds a similar ratio of about 613:387, or about 3:2, in Livy's prose excluding the final six syllables (*The Prose Rhythm of Sallust and Livy*, p. 33).

Table 2.1: Distribution of Syllables in All Oratorical Clausulae[86]

Position	N_{heavy}	p_{heavy}	N_{light}	p_{light}	N_{sum}	p_{sum}
6	1257	0.53994845	1071	0.46005115	2328	1
5	1391	0.59750859	937	0.40249141	2328	1
4	1351	0.58032646	977	0.41967354	2328	1
Antepenultimate	1065	0.45747423	1263	0.54252577	2328	1
Penultimate	1626	0.69845361	702	0.30154639	2328	1
Mean:		0.57474227		0.42525773		1

With this, following the example of six coins given above, it is an easy matter to calculate the probability of any particular combination of six syllables: simply multiply these probabilities. For example, the expected probability $\hat{p}$ of any of Muretus' clausulae scanning as the famous *esse videātur* clausula (– ⏑ ⏑ ⏑ – –) is:

$$\hat{p} = p_{sixth} \cdot p_{fifth} \cdot p_{fourth} \cdot p_{antepenultimate} \cdot p_{penultimate} \cdot p_{ultimate}$$
$$\hat{p} = 0.5399 \cdot 0.4025 \cdot 0.4197 \cdot 0.5425 \cdot 0.6985 \cdot 1$$
$$\hat{p} = 0.0346$$

The actual result is closer to 0.034560837, but the constraints of legibility force the truncation of long numbers; a computer, in calculating this probability, need make no such concessions to brevity, and thus the calculations that follow reflect the computer's greater capacity for handling long numbers.

Multiplying this probability of finding that individual clausula, $\hat{p}_i$ (where the subscript *i* indicates this individual clausular pattern), by the total number *N* of clausulae, 2328, gives the expected frequency $\hat{f}$ of *esse videātur* clausulae (assigned the ID 18 in the data tables of this study, per Aili's example) in Muretus' orations:

[86] Since the ultimate syllable is considered anceps, it has been marked heavy in all data collected and assigned a probability of 1 for heaviness. In effect, the final syllable can be discarded from calculations, as multiplication by 1 has no effect.

$$\hat{f}_i = \hat{p}_i \cdot N$$
$$\hat{f}_{18} \approx 0.0345037 \cdot 2328$$
$$\hat{f}_{18} \approx 80.45$$

A certain bit of error is, again, introduced into the calculations by rounding; in the data tables that follow, numbers are rounded for the purposes of presentation in the limited space of a page, but, in the calculations themselves, the computer preserves the full number. Thus, of the 2328 clausulae sampled from Muretus, we should expect, based on the distribution of long and short syllables across all the clausulae, to find that around 80 share the same metrical pattern as *esse videātur*. In fact, 234 clausulae in the total population of Muretus' oratorical clausulae conform to this pattern. The significance of this discrepancy combined with that between the observed and expected frequencies of all thirty-two possible combinations of the final six syllables will yield a measure of the degree to which Muretus' practice diverges from the random combination of the same populations of syllables.

In Accentual Data

The expected frequencies of the accentual data are calculated in a fashion similar to that of the metrical data. Ultimate words are tallied in categories according to the combination of their syllabic length and metrical type (monosyllable, paroxytone, proparoxytone); penultimate words are tallied according to their metrical type. Thus, a clausula described as *p 4p*, meaning a tetrasyllabic paroxytone preceded by another paroxytone, as in *esse videātur*, would be tallied under the headings *p* among the penultimate words and *4p* among the ultimate. The probability of the combination of these two words, as in the example of the coins given above, is simply the product of the probabilities of encountering

the ultimate and penultimate words. Among the orations, 777 ultimate words are *4p*, and 887 penultimate are *p*, of the 1551 under consideration.

$$probability = \frac{777}{1551} \cdot \frac{887}{1551} = 0.28649764$$

We thus expect around 29%, or 444, of the oratorical clausulae to be *p 4p*. In fact, only 344 *p 4p* clausulae are observed in the orations, and so we must conclude that Muretus does not prefer the *p 4p* rhythm. If he were to have seemed to prefer that rhythm, however, we could, by a goodness-of-fit test, determine whether that preference, in conjunction with the distribution of the rest of the clausulae, indicates that Muretus aimed at a system of accentual rhythm or, instead, that he was indifferent to *cursus*.

Goodness-of-Fit Tests

Statistical tests called *goodness-of-fit* tests can determine the degree to which the observed data fits the expectations; two popular ones are Pearson's chi-square test and the G-test. These tests are generic and common, not only to the metrical and accentual data, but indeed to a wide range of applications in many disciplines. An example of their application to the metrical data should suffice to explain also their application to the accentual data. The metrical data takes the form of 32 categories or bins, one for each possible clausula;[87] each category has an observed and an expected frequency.

[87] There are five syllabic positions (as the sixth and final is anceps), each of which can hold a long or short; this means that each clausula is, in essence, a five digit binary number, which means that 32 combinations exist.

Pearson's Chi-Square Test

In Pearson's chi-square test, within each category (clausular pattern, denoted by a subscript *i*), the difference between the observed (f_i) and expected ($\hat{f}_i$) frequencies is squared and then divided by the expected frequency:

$$\frac{\left(f_i - \hat{f}_i\right)^2}{\hat{f}_i} = \frac{\left(observed - expected\right)^2}{expected}$$

Thus, to continue the example of *esse videātur* (pattern 18):

$$\frac{\left(f_{18} - \hat{f}_{18}\right)}{\hat{f}_{18}} = \frac{\left(234 - 80.45\right)^2}{80.45} \approx 293.1$$

This result gives something of a measure of the degree to which the expected and observed frequencies of this particular pattern diverge, but this cannot stand alone without considering the remainder of the categories (clausulae), especially as the expected frequencies were calculated as an expectation arising from the full set of all data. Thus we need an overall picture of the divergence of observations from expectations for all the data: the calculation is performed across all the categories, and the results of all are summed (from *i=1* to *i=a*, where *a* is the total number of clausular patterns, 32), giving X^2:

$$X^2 = \sum_{i=1}^{a} \frac{\left(f_i - \hat{f}_i\right)^2}{\hat{f}_i} = \sum_{i=1}^{a} \frac{\left(observed - expected\right)^2}{expected}$$

The summation X^2 must still be evaluated to determine whether the sum is significant, which is covered below in "Interpreting the Results of the Goodness-of-Fit Tests." Note that the "chi-square test" is not the same thing as the chi-square distribution, although its results closely resemble the chi-square distribution and are evaluated against it;

for that reason, the chi-square test results have been labeled X^2 in this study, rather than χ^2.[88]

Note that this X^2 represents the sum of the calculations performed on all the categories, and thus measures the sum deviation of all observations from all expectations, not directly informing us of the significance of the contribution of individual clausulae to the overall acceptance or rejection of the notion that the clausular distribution is nonrandom. To demonstrate the significance of a single pattern's contribution, the chi-square test is performed on the clausula in question and then against all other clausulae grouped, for which see "Significance of Individual Clausulae" below on p. 40.

Most researchers engaging in internal analysis of metrical or accentual Latin prose rhythm have employed the chi-square test to check for goodness-of-fit.[89]

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[88] Sokal and Rohlf recommend the practice of distinguishing X^2 from χ^2 at *Biostatistics*, p. 301. This is important because the interpretation of the results of the goodness of fit test is a comparison between X^2 and χ^2

[89] E.g. Tore Janson, *Prose Rhythm in Medieval Latin*, pp. 20–22; Hans Aili, *The Prose Rhythm of Sallust and Livy*, pp. 37–39; Giovanni Orlandi, "Metrical and Rhythmical Clausulae in Medieval Latin Prose," pp. 396–401. Among today's statisticians, Sokal and Rohlf seem to consider the chi-square test obsolete due to advances in computing power and the theoretical advantages of the G-test, (*Biostatistics,* pp. 295, 300), but Zar gives arguments in favor of the chi-square test (*Biostatistical Analysis*, p. 475).

More advanced statistical methods are now employed in the broader field of stylochronometry, allowing the researcher to consider a far larger range of stylistic dimensions than prose rhythm; for a summary of recent efforts and methods in English, Greek and Latin literature, see Constantina Stamou, "Stylochronometry: Stylistic Development, Sequence of Composition, and Relative Dating," *Literary and Linguistic Computing* (Oxford University Press) 23, no. 2 (2009): pp. 181-199. The purposes of stylochronometry require a multidimensional comparison among multiple works, however, and thus require more complicated analyses; the investigation of prose rhythm is comparatively simplistic and does not require more than the tools outlined in the current chapter.

G-Test or Likelihood Ratio Test

In the G-test, also called the likelihood ratio test, a different calculation is performed on each of the categories than in the chi-square test, but the results are similarly summed; they are then doubled and subjected to a slight correction. The G-test is preferable in instances where, for any category, the absolute value of the difference between the observed and expected frequencies is greater than the expected frequency, expressed as $\left|f_i - \hat{f}_i\right| > \hat{f}_i$.[90] As this is the case with the data gathered from this investigation, G-test results have been included.

Within each category (clausular pattern, denoted by a subscript *i*), the natural logarithm of the quotient of the observed frequency (f_i) divided by expected frequency ($\hat{f}_i$) is multiplied by the observed frequency:

$$f_i \cdot \ln\left(\frac{f_i}{\hat{f}_i}\right) = observed \cdot \ln\left(\frac{observed}{expected}\right)$$

Thus, to continue the example of *esse* videatur (pattern 18):

$$f_{18} \cdot \ln\left(\frac{f_{18}}{\hat{f}_{18}}\right) = 234 \cdot \ln\left(\frac{234}{80.45}\right) \approx 249.85$$

The results of these calculations across all categories are summed (from *i=1* to *i=a,* where *a* is the total number of clausular patterns, 32), and then doubled, giving *G*:

$$G = 2\sum_{i=1}^{a}\left(f_i \cdot \ln\left(\frac{f_i}{\hat{f}_i}\right)\right)$$

[90] Zar, Biostatistical Analysis, p. 475.

Sokal and Rohlf note that the G-test should routinely include an adjustment by Williams' correction for G, to give a result closer to the actual chi-square distribution.[91] The formula for Williams' correction (q) is:

$$q = 1 + \frac{a^2 - 1}{6N\nu}$$

where a represents the total number of categories (clausular patterns) being tested, N the population size, and ν the number of degrees of freedom at which the G-test will be evaluated. For a 2×2 contingency table (as when checking for the significance of a single clausular pattern against the sum of all other patterns) the formula reduces algebraically to:

$$q = 1 + \frac{1}{2N}$$

Dividing G by Williams' correction gives the adjusted G value (G_{adj}).

Interpreting the Results of the Goodness-of-Fit Tests

The results of the chi-square test and G-test are interpreted in the same fashion, as the distribution of X^2 and G are approximately identical. The results from each test are evaluated against a critical value given from a theoretical chi-square distribution for the given number of degrees of freedom; this value represents the threshold under which the summation X^2 or G_{adj} might rise due to chance variation when a sample of data drawn from a population adhering to the assumptions underlying the expected frequencies is compared to the expected frequencies.

[91] Sokal and Rohlf, *Biostatistics*, pp. 304–305; the correction makes little difference at sample sizes above 200, however.

If the expected frequencies were not dependent on the observed data, the number of degrees of freedom would be one less than the number of categories. As the categories are clausular patterns, of which there are 2^5, there are thus 32 categories. Because the expected frequencies were calculated from the data collected, however, the hypothesis is said to be *intrinsic*. Five parameters, the syllable positions that differentiate one category from another, were used to calculate the expected frequencies, and thus the categories depend on one another to this extent. The formula for determining the degrees of freedom for an intrinsic hypothesis is:

$$degrees\ of\ freedom = categories - parameters - 1$$
$$degrees\ of\ freedom = 32 - 5 - 1 = 26$$

The chi-square critical value given in standard statistical tables for 26 degrees of freedom is 38.9 at 95% certainty. The critical value for 99% certainty is 45.64. If the X^2 and G are greater than the chi-square critical value, the accompanying level of certainty applies to the hypothesis that Muretus employed metrical clausulae.

Generally, to be accepted as statistically significant, a result have a 95% level of confidence, or $p=.05$; where possible in this study, positive results will be shown to have at least a 99% or 99.9% certainty level, and negative results will be shown to have a certainty of less than 95%. With the advent of ubiquitous and powerful computers, it is now possible, instead of comparing the results of the goodness-of-fit tests to tables of statistics at given certainty levels, to calculate the certainty for any given test result and number of degrees of freedom. Where possible, I have included this kind of evaluation expressed as a percentage of certainty for quick comprehension.

Significance of Individual Clausulae

Giovanni Orlandi points out that the goodness-of-fit tests can establish the significance of the difference between the observed and expected frequencies for each individual clausular pattern rather than the significance for the entire sample.[92] The observed and expected frequencies for a single pattern are opposed to the sum of all the other patterns in the sample, and the chi-square statistic is calculated from these two groups. To this I would add the G-test for confirmation. Here, since only two categories are in opposition, the number of degrees of freedom is 1, and the critical value of the chi-square distribution is 3.84 for 95% confidence, 6.64 for 99% confidence, and 10.83 for 99.9% confidence.

Testing the Length of Clausulae

Hans Aili, in investigating Cicero, developed an application of the chi-square test for investigating clausular length.[93] He groups clausulae that appear to be preferred into groups that share common syllables, beginning from the penultimate syllable and proceeding backwards. At each syllable position that would define a group of clausulae, he tests for goodness of fit of the observed distribution of those clausulae to an expected frequency derived from the probabilities attached to heavy and light versions of that syllable for that position multiplied by the population of the clausulae under investigation, all balanced against the same results from the remainder of all other clausulae in the corpus.

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[92] Giovanni Orlandi, "Metrical and Rhythmical Clausulae in Medieval Latin Prose: Some Aspects and Problems," pp. 396–397 (especially note 7).

[93] Hans Aili, *The Prose Rhythm of Sallust and Livy*, pp. 52–53 (see especially p. 53 n. 1).

For example, pattern 18, the familiar *esse videātur* clausula, shares five syllables with pattern 17. Thus, to investigate the significance of the fifth syllable that governs the group (17,18), we construct the following table:

Table 2.2: Observed Syllable for Patterns 17/18 vs. All Others

Patterns 17, 18	Heavy: Pattern 18	234
	Light: Pattern 17	60
	Subtotal	294
All Other Clausulae	Heavy (2, 4, 6, 8, etc.)	1023
	Light (1, 3, 5, 7, etc.)	1011
	Subtotal	2034
	Grand Total (N)	2328

Expected frequencies ($\hat{f}$) are calculated by multiplying the subtotals by the appropriate probabilities, here for the sixth syllable from the end. From Table 2.1 we know that, at the sixth syllable, the probability that the syllable is heavy is 0.5399 (53.99%), and light 0.4601 (46.01%). Multiplying that by the subtotals, we find that Pattern 18 should occur about 158.74 times, 17 about 135.26 times; we calculate X^2 and G values from this, and Williams' correction is applied to G.

Table 2.3: Sixth Syllable of Patterns 17 and 18 (ν=1; N=2328)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 17 & 18	Long (18)	234	158.74	35.68	90.80
	Short (17)	60	135.26	41.87	-48.77
	Sum	294	294		
Other	Long	1023	1098.26	5.16	-72.62
	Short	1011	935.74	6.05	78.20
	Sum	2034	2034		
Final Result				**88.76**	**99.13**

$X^2 = 88.76 > \chi^2_{0.001[1]} = 10.83 \quad G_{adj} = 99.13 > \chi^2_{0.001[1]} = 10.83$ certainty ≈ 99.90%

The results are presented with a comparison to the relevant chi-square values; here, χ^2 is given at the 0.001 or 99.9% certainty level for one degree of freedom, 10.83. Both the

value of the chi-square test and the G-test exceed 10.83, and so both are significant at the 99.9% certainty level; thus we can be sure that the sixth foot is significant, and pattern 17 and 18 do not form a homogenous group.

CHAPTER THREE: ORATORICAL CLAUSULAE

Muretus clearly prefers certain metrical patterns in his orations. Analysis of the entire oratorical corpus, presented in Table 3.1, considering all 2328 sentence endings, shows that some patterns occur so much more frequently than expected that we may be more than 99.9% certain that this is not due to chance. Patterns that occur at all more frequently than expected are given in bold type.

Table 3.1: Distribution of Oratorical Clausulae (*N*=2328)

ID	Pattern	Observed	Probability	Expected	X^2 Test	G-Test
1	˘˘˘˘˘–	10	0.0127	29.6499	13.02	-10.87
2	–˘˘˘˘˘–	15	0.0150	34.8064	11.27	-12.63
3	˘–˘˘˘˘–	16	0.0189	44.1060	17.91	-16.22
4	––˘˘˘˘–	16	0.0222	51.7767	24.72	-18.79
5	˘˘–˘˘˘–	21	0.0176	40.9451	9.72	-14.02
6	–˘˘–˘˘–	24	0.0206	48.0660	12.05	-16.67
7	˘––˘˘˘–	12	0.0262	60.9083	39.27	-19.49
8	–––˘˘˘–	28	0.0307	71.5011	26.47	-26.25
9	˘˘˘–˘˘–	21	0.0107	24.9539	0.63	-3.62
10	**–˘˘–˘˘–**	**44**	**0.0126**	**29.2938**	**7.38**	**17.90**
11	**˘–˘–˘˘–**	**44**	**0.0159**	**37.1206**	**1.27**	**7.48**
12	**––˘–˘˘–**	**52**	**0.0187**	**43.5763**	**1.63**	**9.19**
13	**˘˘––˘˘–**	**80**	**0.0148**	**34.4602**	**60.18**	**67.38**
14	**–˘––˘˘–**	**176**	**0.0174**	**40.4533**	**454.18**	**258.78**
15	˘––––˘–	51	0.0220	51.2617	0.00	-0.26
16	**––––˘–**	**92**	**0.0258**	**60.1768**	**16.83**	**39.05**
17	˘˘˘˘–––	60	0.0294	68.5285	1.06	-7.97
18	**–˘˘˘––**	**234**	**0.0346**	**80.4465**	**293.10**	**249.85**
19	˘–˘˘–––	24	0.0438	101.9404	59.59	-34.71
20	––˘˘–––	33	0.0514	119.6692	62.77	-42.51
21	˘˘–˘–––	92	0.0407	94.6346	0.07	-2.60
22	–˘–˘–––	60	0.0477	111.0928	23.50	-36.96
23	**˘––˘––**	**371**	**0.0605**	**140.7749**	**376.51**	**359.51**
24	**–––˘––**	**247**	**0.0710**	**165.2575**	**40.43**	**99.27**
25	˘˘˘–––	27	0.0248	57.6750	16.31	-20.49
26	–˘˘–––	35	0.0291	67.7055	15.80	-23.09
27	**˘–˘––**	**188**	**0.0369**	**85.7952**	**121.75**	**147.48**
28	**––˘––**	**158**	**0.0433**	**100.7161**	**32.58**	**71.15**
29	˘˘––––	20	0.0342	79.6465	44.67	-27.64
30	–˘––––	18	0.0402	93.4980	60.96	-29.66
31	˘–––––	34	0.0509	118.4791	60.24	-42.44
32	––––––	25	0.0597	139.0841	93.58	-42.91
Sum		2328	1	2328	**X^2=1999.45**	**G_{adj}=1749.55**

$X^2 = 1999.45 > \chi^2_{0.001[26]} = 54.05$ $G_{adj} = 1749.55 > \chi^2_{0.001[26]} = 54.05$ certainty > 99.999%

Preferred Patterns

The analysis of the entire corpus established that some patterns are used more frequently than expected and that the divergence from expectations across the entire corpus was far too great to be accounted for by the hypothesis that the allocation of syllables in each position is due to chance. While the analysis did highlight certain patterns as being used more frequently than expected, it cannot be used to demonstrate which individual patterns occur more frequently than could be expected to a degree that might be called significant. To establish this, the chi-square and adjusted G-tests must be performed on each pattern individually as measured against the sum of all other patterns.

Table 3.2 shows the chi-square and adjusted G-test results for each of the patterns that occur more frequently than expected as measured individually against the sum of all other patterns. The third through fifth columns give the results of the chi-square tests, and the sixth through eighth those of the adjusted G-tests; of each group, the first column gives the test statistic, the second the chi-square distribution probability (p) for each test result at one degree of freedom (pattern vs. sum), and the same expressed as a percentage of certainty that the pattern diverges from expectations (that is, that the null hypothesis is rejected). Patterns 13, 14, 16, 18, 23, 24, 27 and 28 were all significant beyond question; pattern 10 is significant at a level surpassing the 95% mark, while 11 and 12 fail to meet that level.

Table 3.2: Preferred Patterns among All Orations (*N*=2328)

ID	Pattern	X^2	p (X^2,ν)	Certainty	G_{adj}	P (G_{adj},ν)	Certainty
10	- ˘ ˘ - ˘ -	**7.47**	**6.27E-03**	**99.4**	**6.48**	**1.09E-02**	**98.9**
11	˘ - ˘ - ˘ -	1.29	2.56E-01	74.4	1.22	2.69E-01	73.1
12	- - ˘ - ˘ -	1.66	1.98E-01	80.24	1.56	2.12E-01	78.8
13	˘ ˘ - - ˘ -	**61.08**	**5.48E-15**	**> 99.9**	**44.59**	**2.43E-11**	**> 99.9**
14	- ˘ - - ˘ -	**462.21**	**1.59E-102**	**> 99.9**	**254.61**	**2.57E-57**	**> 99.9**
16	- - - - ˘ -	**17.28**	**3.23E-05**	**> 99.9**	**14.9**	**1.13E-04**	**> 99.9**
18	- ˘ ˘ - - -	**303.59**	**5.44E-68**	**> 99.9**	**203.3**	**3.98E-46**	**> 99.9**
23	˘ - - ˘ - -	**400.74**	**3.80E-89**	**> 99.9**	**283.64**	**1.21E-63**	**> 99.9**
24	- - - ˘ - -	**43.52**	**4.20E-11**	**> 99.9**	**38.17**	**6.48E-10**	**> 99.9**
27	˘ - ˘ - - -	**126.41**	**2.50E-29**	**> 99.9**	**95.26**	**1.67E-22**	**> 99.9**
28	- - ˘ - - -	**34.05**	**5.37E-09**	**> 99.9**	**29.21**	**6.49E-08**	**> 99.9**

Specific Patterns of Interest

Having identified patterns that, on their own, are obviously preferred, it remains to see whether they can be combined into larger groups indicative of preferences shorter than six syllables, if they bear relationships to resolved or contracted forms, and if a simple set of rules can generate the preferences manifested in the text. The answer to all three questions is affirmative; in fact, Muretus' system of *numerus* does not appear to be as complex as Cicero's.

According to Table 3.2, nine patterns are significantly preferred. They are reproduced below in

Table 3.3, along with the percentage of the total corpus (*N*) each represents. These significantly preferred clausulae make up 1590, or 68.3%, of the 2328 total clausulae. Several of them appear in clusters of patterns; it may be that fewer than six common syllables make up a meaningful unit within the patterns; for example, Muretus' preference

might be for a final *creticus* and *spondeus* rather than a full *dicreticus*; the five-syllable *creticus* and *spondeus* combination might show up as two patterns rather than one.

Table 3.3: Preferred Patterns among All Orations

ID	Pattern	Observed	Expected	Percent of *N*
10	– ˘ ˘ – ˘ –	44	29.2938	1.9
13	˘ ˘ – – ˘ –	80	34.4602	3.4
14	– ˘ – – ˘ –	176	40.4533	7.6
16	– – – – ˘ –	92	60.1768	4.0
18	– ˘ ˘ ˘ – –	234	80.4465	10.1
23	˘ – – ˘ – –	371	140.7749	15.9
24	– – – ˘ – –	247	165.2575	10.6
27	˘ – ˘ – – –	188	85.7952	8.1
28	– – ˘ – – –	158	100.7161	6.8
Σ		**1590**	**737.3743**	**68.3%**

Patterns 23 and 24 (⏑ – – ⏑ – ⏒ and – – – ⏑ – ⏒)

Patterns 23 and 24 together make up over a quarter of the population (26.5%). The final four beats of each pattern form a *dichoreus*. In the case of pattern 24 (10.6%), the preceding syllables form a *spondeus*; those of pattern 23 (15.9%) the final two beats of a *creticus*, *anapeston*, or *iambus*. The difference between these two patterns is significant at beyond the 99.9% confidence level (v. Table 3.4).[94]

Thus, while Muretus seems to favor the *dichoreus*, there is a marked preference for pattern 23, which occurs much more frequently than pattern 24, and thus the dichoreus preceded by a *creticus, anapeston,* or *iambus* is preferred to that preceded by a *spondeus*. Aili reaches the same conclusion regarding Cicero's preference of pattern 23 to pattern

[94] It should be noted that the test results derive not only from operations performed on the two patterns here considered, but also upon all other clausulae lumped together as a group at the same time. Thus, though there remains a single degree of freedom, namely the length of the syllable, four pairs of observed and expected results are also calculated.

24.[95] Based on Aili's work, it seems reasonable to conjecture that the preferred foot preceding the *dichoreus* is a *creticus*, but curtailing the data at six feet precluded analysis that would prove this guess.

Table 3.4: Sixth Syllable of Patterns 23 and 24 (*N*=2328)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 23 & 24	Long (24)	371	333.69	4.17	39.32
	Short (23)	247	284.31	4.90	-34.75
	Sum	618	618		
Other	Long	886	923.31	1.51	-36.55
	Short	824	786.69	1.77	38.18
	Sum	1710	1710		
Final Result				**12.35**	**12.39**

$X^2 = 12.35 > \chi^2_{0.001[1]} = 10.83$ $G_{adj} = 12.39 > \chi^2_{0.001[1]} = 10.83$ certainty > 99.95%

Paterns 9–16 (– ∪ ⏑)

Patterns 9–16 all end in a *creticus*, and all except 9 and 15 occur more often than expected, although only 10, 13, 14 and 16 occur significantly more frequently. If all patterns ending in the *creticus* are counted, they make up 24% of the corpus; discounting 9 and 15, about 21%. It seems that the *creticus* is a pleasing final foot, but the set of patterns is not homogenous at the fourth foot, as shown in Table 3.5. Within the short half of this syllable, the diiambic patterns 9–12, there is no significant difference at the fifth syllable, as shown in Table 3.6. In fact, expectations arising from the ratio of heavy to light syllables in the fifth position almost perfectly explain the distribution of patterns 9/10 and 11/12. Within these *diiambi*, pattern 9 stands out for not being preferred in the overall analysis, and it also stands out in comparison to its neighbor pattern 10, as dem-

[95] Hans Aili, *The Prose Rhythm of Sallust and Livy*, p. 54.

onstrated in Table 3.7; the findings are significant at the 95% confidence level. The infrequency of pattern 9, a *proceleusmaticus* and *creticus*, reflects Muretus' general tendency not to favor long strings of light syllables, with the exception of pattern 18.

Table 3.5: Fourth Syllable of Patterns 9–16 (*N*=2328)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 9–16	Long (13–16)	399	324.99	16.86	81.87
	Short (9–12)	161	235.01	23.31	-60.90
	Sum	560	560		
Other	Long	952	1026.02	5.34	-71.28
	Short	816	741.98	7.38	77.59
	Sum	1768	1768		
Final Result				**52.89**	**54.51**

$X^2 = 52.89 > \chi^2_{0.001[1]} = 10.83 \quad G_{adj} = 54.51 > \chi^2_{0.001[1]} = 10.83$ certainty > 99.999%

Table 3.6: Fifth Syllable of Patterns 9–12 (*N*=2328)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 9–12	Long (11–12)	96	96.20	4.11E-04	-0.20
	Short (9–10)	65	64.80	6.10E-04	0.20
	Sum	161	161		
Other	Long	1295	1294.80	3.05E-05	0.20
	Short	872	872.20	4.53E-05	-0.20
	Sum	2167	2167		
Final Result				**1.10E-03**	**1.10E-03**

$X^2 = 1.10 \times 10^{-3} < \chi^2_{0.05[1]} = 3.84 \quad G_{adj} = 1.10 \times 10^{-3} < \chi^2_{0.05[1]} = 3.84$ certainty < 2.65%

Table 3.7: Sixth Syllable of Patterns 9–10 (*N*=2328)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 9–10	Long (10)	44	35.10	2.26	9.95
	Short (9)	21	29.90	2.65	-7.42
	Sum	65	65		
Other	Long	1213	1221.90	0.06	-8.87
	Short	1050	1041.10	0.08	8.94
	Sum	2263	2263		
Final Result				**5.05**	**5.19**

$X^2 = 5.05 > \chi^2_{0.05[1]} = 3.84 \quad G_{adj} = 5.19 > \chi^2_{0.025[1]} = 5.02$ certainty > 97.54%

Between patterns 11 and 12, however no clear difference emerges, as illustrated by Table 3.8. The frequencies expected based on the sixth syllable almost perfectly match the observations; the clausula is not six syllables long, but five.

Table 3.8: Sixth Syllable of Patterns 11–12 (*N*=2328)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 11–12	Long (12)	52	51.84	5.25E-4	0.17
	Short 11)	44	44.16	6.16E-4	-0.16
	Sum	96	96		
Other	Long	1205	1205.16	2.26E-5	-0.16
	Short	1027	1026.84	2.65E-5	0.17
	Sum	2232	2232		
Final Result				**1.19E-3**	**1.19E-3**

$X^2 = 1.19 \times 10^{-3} < \chi^2_{0.05[1]} = 3.84 \quad G_{adj} = 1.19 \times 10^{-3} < \chi^2_{0.05[1]} = 3.84$ certainty < 2.76%

Combined with the results from 9–10, it seems reasonable to suggest that any cretic preceded by a foot ending in a short syllable is acceptable, unless the preceding foot is a *proceleusmaticus* or combination of feet resulting in a long string of light syllables.

On the other hand, within the long division of 9–16, the patterns 13–16, the fifth syllable is quite significant, as shown in Table 3.9.

Table 3.9: Fifth Syllable of Patterns 13–16 (*N*=2328)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 13–16	Long (15–16)	143	238.41	38.18	-73.09
	Short (13–14)	256	160.59	56.68	119.37
	Sum	399	399		
Other	Long	1248	1152.59	7.90	99.25
	Short	681	776.41	11.72	-89.29
	Sum	1929	1929		
Final Result:				**114.48**	**112.36**

$X^2 = 114.48 > \chi^2_{0.001[1]} = 10.83 \quad G_{adj} = 112.36 > \chi^2_{0.001[1]} = 10.83$ certainty > 99.999%

The expected light values more closely match the opposite heavy value at this position: we expect about 239 heavy syllables and get 256 light. Thus, we are compelled to accept that the fifth foot is significant with beyond 99% certainty and approaching 100%. Within the *creticus* group, then, there are favored subgroups, and those where the foot preceding the *creticus* ends in a long syllable, or, in tetrasyllabic terms, the *epitritus tertius*, are preferred to those where the preceding foot ends in a short syllable, the *diiambus*.

Patterns 13 and 14 together make up 10.9% of the data. The final five syllables make up a *dochmius*, one of Cicero's theoretical favorites and the only pentasyllabic foot he names. The difference between the neighbors is shown in Table 3.10.

Table 3.10: Sixth Syllable of Patterns 13 and 14 (*N*=2328)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 13 & 14	Long (14)	176	138.21	10.33	42.54
	Short (13)	80	117.79	12.12	-30.95
	Sum	256	256		
Other	Long	1081	1118.68	1.27	-37.03
	Short	991	953.32	1.49	38.41
	Sum	2072	2072		
Final Result:				**25.21**	**25.90**

$X^2 = 25.21 > \chi^2_{0.001[1]} = 10.83 \quad G_{adj} = 25.90 > \chi^2_{0.001[1]} = 10.83$ certainty > 99.999%

Thus, while the dochmiac patterns are in general preferred to the molossoiambic patterns, pattern 14, the *dicreticus*, and pattern 13 are thus significantly different with a certainty of at least 99.9%, with the *dicreticus* preferred. The *dicreticus* makes up 7.5% of the corpus, while 3.4% conforms to pattern 13. Whether pattern 13 is preferred as a *dochmius* or the composition of a *creticus* and either an *iambus*, an *anapeston*, or some other foot is unknown; data from a seventh foot would help clarify the question.

Patterns 15 and 16, the *molossoiambi*, are significantly different at the sixth syllable with 98.95% certainty according to the chi-square test and 99% according to the adjusted G test, shown in Table 3.11.

Table 3.11: Sixth Syllable of Patterns 15 and 16 (*N*=2328)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 15 & 16	Long (16)	92	77.21	2.83	16.12
	Short (15)	51	65.79	3.32	-12.98
	Sum	143	143		
Other	Long	1165	1179.79	0.19	-14.69
	Short	1020	1005.21	0.22	14.90
	Sum	2185	2185		
Final Result:				**6.56**	**6.67**

$X^2 = 6.56 > \chi^2_{0.025[1]} = 5.02 \quad G_{adj} = 6.67 > \chi^2_{0.01[1]} = 6.64$ certainty > 98.95%

The frequency of pattern 15, taking all its syllables into consideration, however, is about par with expectations, while pattern 16, a string of long syllables interrupted by a penultimate short and which makes up 4.0% of the corpus, is clearly preferred. Thus the pattern *spondeus* and *creticus* does not seem to form a preferred pattern; the *creticus* preceded by a *molossus* or *spondeus iteratus*, or the *epitritus tertius* preceded by a *spondeus*, is preferred. A seventh foot would help make this clear.

Patterns 27 and 28 (⏑ – ⏑ – – ⏒ and – – ⏑ – – ⏒)

It is tempting to see patterns 27 and 28, which make up about 15% of the corpus, as related to 18 in that, if one holds pattern 18 to consist of a resolved *creticus,* rather than an *paean primus*, and a *spondeus*, then patterns 27 and 28 also contain *cretici* and *spondei* in the same positions, differing only in the length of the sixth syllable from the end. Yet, that syllable is significant, as shown in Table 3.12.

Table 3.12: Sixth Syllable of Patterns 27 and 28 (*N*=2328)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 27 & 28	Long (28)	158	186.81	4.44	-26.46
	Short (27)	188	159.19	5.21	31.27
	Sum	346	346		
Other	Long	1099	1070.08	0.78	29.31
	Short	883	911.92	0.92	-28.45
	Sum	1982	1982		
Final Result:				**11.35**	**11.30**

$X^2 = 11.35 > \chi^2_{0.001[1]} = 10.83$ $G_{adj} = 11.31 > \chi^2_{0.001[1]} = 10.83$ certainty > 99.92%

We may thus be at least 99.9% certain that pattern 27 and 28 are distinct, and that pattern 27 is preferred to 28. In Aili's analysis of Cicero, this distinction was not found and the five final syllables, a *hypobrachys* (*creticus* and *spondeus*) were counted as a single, preferred pattern.[96] While this isn't necessarily ruled out by the significance test in Table 3.12, it is clear that the sixth foot is also significant and whatever precedes the *hypobrachys* is also significant in Muretus' prose. Given the analogy between the *creticus* and *paean primus* outlined above, and that Aili had found that a Ciceronian preference

[96] Hans Aili, *The Prose Rhythm of Sallust and Livy*, pp. 53–54.

for an *iambus* preceding the *paean primus* in pattern 18, it is not surprising to find a preference for a short syllable preceding the *hypobrachys*.[97]

Pattern 18 (– ∪ ∪ ∪ – ⏑)

The infamous *esse videātur* pattern, comprising a *paean primus* (or a *creticus* with its final syllable resolved into two) and *spondeus*, alone makes up 10.1% of the corpus. It has no evident neighbors, and seems clearly to be favored on its own; for statistical evidence of this pattern's independence from its neighbor, pattern 17, see Table 2.3.

Conclusions

In his Orations, Muretus seems to have preferred:

1) A final *creticus*,
    a) Preceded by a foot ending in a heavy syllable,
        i) Most especially the *dicreticus*,
        ii) Or, short of that, any dochmiac foot,
        iii) But also the molossoiambic feet;
    b) Or preceded by a foot ending in a light syllable, so long as that foot does not end in at least three light syllables;
2) A final *ditrocheus* preceded by a foot ending in a long syllable,
    a) Most of all when resolved into pattern 18 (*esse videātur*);
    b) Or also when the combination is preceded by a short syllable (like a *creticus*); and
3) A final *spondeus* preceded by a *creticus*.

[97] Hans Aili, *The Prose Rhythm of Sallust and Livy*, p. 55.

CHAPTER FOUR: DIACHRONIC ANALYSIS OF THE ORATIONS

Because the number of clausulae found in all the orations is very large, it is possible to compare and contrast subsets of that data. We can therefore break the 2328 clausulae of the collected orations into two subsets, those composed between the years 1552 and 1572, containing the 1030 earliest clausulae of the population, and those from 1574 to 1585, containing the lattermost 1013.[98] From a comparison of these subsets, we can determine whether Muretus' preferences with respect to prose rhythm changed over the course of his career. Frotscher's edition of the orations does not give them entirely in chronological order, and therefore their correct chronological order is presented below in Table 4.1, in ascending order from the beginning of Muretus' career, and Table 4.3, in descending order from the end.

[98] Chronostylistic studies offer more sophisticated methods to determine if certain subsets of texts differ from the others and to what degree; as the dates and order of composition of the orations are already known, however, a straightforward chronological division is possible. If a significant difference emerged from that division, it would be sensible to revisit the grouping and determine whether the changes observed fit a linear pattern and whether the changes correspond to significant points in Muretus' career and known avenues of study.

Table 4.1: The Earlier Orations (The First 1030 Clausulae)

Oration	Year	Title
1.1	1552	De Dignitate ac Praestantia Studii Theologici
1.2	1554	De Laudibus Litterarum
1.3	1555	De Utilitate ac Praestantia Litterarum Humaniorum adversus Quosdam Earum Vituperatores
1.4	1557	De Philosophiae et Eloquentiae Coniunctione
1.5	1560	Pro Francisco II Galliarum Rege ad Pium IV Pontificem Maximum
1.6	1560	Pro Antonio Rege Navarrae ad Pium Iv Pontificem Maximum
1.7	1563	De Moralis Philosophiae Laudibus
1.8	1564	De Moralis Philosophiae Necessitate
1.9	1565	De Iustitiae Laudibus
1.10	1565	De Sui Cognitione deque Omnibus Humani Animi Facultatibus
1.11	1565	Pro Alfonso II Duce Ferrariae etc. ad Pium IV Pontificem Maximum
1.12	1566	Pro Alfonso II Duce Ferrareiae ad Pium V Pontificem Maximum
1.13	1566	Pro Carolo IX Rege Christianissimo ad Pium V Pontifcem Maximum
1.14	1567	Pro Sigismundo Augusto Rege Poloniae ad Pium V Pontificem Maximum
1.15	1567	De Toto Studiorum Suorum Cursu deque Eloquentia ac Ceteris Cisciplinis cum Iurisprudentia Coniungendis
1.16	1569	Cur ad Munus Docendi Quo Se Sponte Abdicaverat Revocatus Sit
1.17	1569	De Doctoris Officio deque Modo Iurisproducentiam Docendi
1.18	1571	De Auctoritate et Officio Iudicum
1.19	1571	In Reditu ad Urbem post Turcas Navali Praelio Victos
1.20	1572	In Funere Pii V. Pontificis Maximi

Table 4.2: Syllable Distribution in the Earlier Orations (N=1030)

Position	N_{heavy}	p_{heavy}	N_{light}	p_{light}	N_{sum}	P_{sum}
6	554	0.53786408	476	0.46213592	1030	1
5	618	0.60000000	412	0.40000000	1030	1
4	558	0.54174757	472	0.45825243	1030	1
Antepenultimate	452	0.43883495	578	0.56116505	1030	1
Penultimate	738	0.71650485	292	0.28349515	1030	1
Mean:		0.56699029		0.43300971		1

Table 4.3: The Later Orations (The Final 1013 Clausulae)

Oration	Year	Title
2.19	1585	ad Cardinales die Paschae cum Subrogandi Pontificis Caussa Conclave Ingressuri Essent
1.26	1584	In Funere Pauli Foxii Archiepiscopi Tolosiani
2.1	1584	De Mysterio et Festo Circumcisionis Dominicae
2.17	1583	Repetiturus Libros Aristotelis de Moribus
2.2	1582	De Sancto Iohanne Evangelista
2.16	1582	Cum Interpretari Inciperet Epistolas Ciceronis ad Atticum
2.21	1581/2	In Funere Ioannis Episcopiii Militiae Melitensis Magni Magistri[99]
2.15	1581	Cum Pervenisset ad Annalium Librum Tertium
2.13	1580	Cum Annales Taciti Explicandos Suscepisset
2.14	1580	Sequitur in Eodem Argumento (de Taciti Annalibus Posito)
2.11	1579	Cum Explanaturus Esset Aeneida Virgilii
2.9	1577	Explicaturus Libros Aristotelis de Republica
2.10	1577	Interpretaturus C. Sallustium de Catilinae Coniuratione
1.25	1576	Nomine Henrici Tertii Galliae et Poloniae Regis
2.7	1576	Gum [*sic*] Aristotelis Libros de Arte Rhetorica Interpretari Inciperet
2.8	1576	Cum Pergeret in Eorundem Aristotelis Librum de Arte Rhetorica Intepretatione
2.3	1575	Cum Senecae Librum de Providentia Interpretaturus Esset
2.12	1575	Aggressurus Satyram Tertiam Decimam Iuvenalis
1.24	1574	In Funere Caroli IX Gallorum Regis
2.5	1574	Cum in Platone Explicando Progrederetur
2.6	1574	Ingressurus Explanare M. T. Ciceronis Libros de Officiis

Table 4.4: Syllable Distribution in the Later Orations (N=1013)

Position	N_{heavy}	p_{heavy}	N_{light}	p_{light}	N_{sum}	P_{sum}
6	557	0.54985193	456	0.45014808	1013	1
5	597	0.58933860	416	0.41066140	1013	1
4	602	0.59427443	411	0.40572557	1013	1
Antepenultimate	477	0.47087858	536	0.52912142	1013	1
Penultimate	698	0.68904245	315	0.31095755	1013	1
Mean:		0.57867720		0.42132280		1

[99] Frotscher does not give the year of this funeral oration, but Jean l'Evesque de la Cassiere, Grand Master of the Knights of St. John, died on December 21, 1581 (Charles Mula, *The Princes of Malta*, p. 116). It therefore cannot have been delivered before that date, and so must be one of the final eight orations in the collection.

Comparison of Syllable Distributions

The frequency of long or short syllables in any specified position does not seem to vary significantly at the 95% level between the early and late orations, as shown in Table 4.5; the likelihood of independence is only 66%.

Table 4.5: Comparison of Syllable Distributions in Early and Late Orations

	Observed		**Expected**		**X^2 Test Calculations**		**G Test Calculations**	
	Early	**Late**	**Early**	**Late**	**Early**	**Late**	**Early**	**Late**
Heavy	554	557	560.1	550.9	0.0669	0.0680	-6.0888	6.1563
	618	597	612.6	602.4	0.0484	0.0492	5.4690	-5.4203
	558	602	584.8	575.2	1.2305	1.2512	-26.2013	27.4423
	452	477	468.4	460.6	0.5718	0.5814	-16.0759	16.6525
	738	698	724.0	712.0	0.2717	0.2763	14.1604	-13.8864
Light	476	456	469.9	462.1	0.0798	0.0811	6.1621	-6.0816
	412	416	417.4	410.6	0.0710	0.0722	-5.4093	5.4809
	472	411	445.2	437.8	1.6166	1.6437	27.6187	-25.9871
	578	536	561.6	552.4	0.4769	0.4849	16.6013	-16.1203
	292	315	306.0	301.0	0.6428	0.6536	-13.6990	14.3473
Results					**X^2:**	**10.24**	**G_{adj}:**	**10.24**
Probabilities for ν=9:					*p*:	0.33	*p*:	0.33

$X^2 = 10.24 < \chi^2_{0.05[9]} = 16.92$ $G_{adj} = 10.24 < \chi^2_{0.05[9]} = 16.92$ certainty < 66.86%

For this analysis, observed values are the frequencies found in Table 4.2 and Table 4.4, while expected values were calculated by marginal tabulation—each observed value's corresponding expected value is the product of the sum the row (the early and late values for that position and weight) and the sum of the column (all syllabic counts for that set of orations, or N_{set}), divided by the sum of N_{early} and N_{late}.

The Clausulae of Muretus' Earlier Orations

The chi-square and G-tests confirm that the earlier 1030 clausulae contain metrical patterns. Rows in bold contain any patterns that occur more frequently than expected.

Table 4.6: The Earlier Oratorical Clausulae (*N*=1030)

ID	Pattern	Observed	Probability	Expected	X^2 Partial	*G* Partial
1	˘˘˘˘˘–	2	0.0135	13.8806	10.17	-3.87
2	–˘˘˘˘–	6	0.0157	16.1551	6.38	-5.94
3	˘–˘˘˘–	6	0.0202	20.8209	10.55	-7.47
4	––˘˘˘–	6	0.0235	24.2327	13.72	-8.38
5	˘˘–˘˘–	9	0.0159	16.4097	3.35	-5.41
6	–˘–˘˘–	9	0.0185	19.0987	5.34	-6.77
7	˘––˘˘–	5	0.0239	24.6145	15.63	-7.97
8	––––˘–	11	0.0278	28.648	10.87	-10.53
9	**˘˘˘–˘–**	**12**	**0.0105**	**10.8547**	**0.12**	**1.20**
10	**–˘˘–˘–**	**18**	**0.0123**	**12.6334**	**2.28**	**6.37**
11	˘–˘–˘–	14	0.0158	16.2821	0.32	-2.11
12	**––˘–˘–**	**21**	**0.0184**	**18.9501**	**0.22**	**2.16**
13	**˘˘––˘–**	**34**	**0.0125**	**12.8325**	**34.92**	**33.13**
14	**–˘––˘–**	**78**	**0.0145**	**14.9353**	**266.29**	**128.93**
15	**˘–––˘–**	**22**	**0.0187**	**19.2487**	**0.39**	**2.94**
16	**––––˘–**	**39**	**0.0218**	**22.4029**	**12.3**	**21.62**
17	˘˘˘˘––	28	0.0341	35.0818	1.43	-6.31
18	**–˘˘˘––**	**118**	**0.0396**	**40.8305**	**145.85**	**125.23**
19	˘–˘˘––	17	0.0511	52.6227	24.11	-19.21
20	––˘˘––	22	0.0595	61.2457	25.15	-22.52
21	˘˘–˘––	39	0.0403	41.4738	0.15	-2.40
22	–˘–˘––	20	0.0469	48.2699	16.56	-17.62
23	**˘––˘––**	**170**	**0.0604**	**62.2107**	**186.76**	**170.9**
24	**–––˘––**	**110**	**0.0703**	**72.4049**	**19.52**	**46.00**
25	˘˘˘–––	12	0.0266	27.4342	8.68	-9.92
26	–˘˘–––	14	0.0310	31.9297	10.07	-11.54
27	**˘–˘–––**	**84**	**0.0400**	**41.1513**	**44.62**	**59.94**
28	**––˘–––**	**62**	**0.0465**	**47.8946**	**4.15**	**16.00**
29	˘˘––––	7	0.0315	32.4328	19.94	-10.73
30	–˘––––	6	0.0366	37.7474	26.7	-11.03
31	˘–––––	15	0.0472	48.6492	23.27	-17.65
32	––––––	14	0.0550	56.6211	32.08	-19.56
Sum		**1030**	**1**	**1030**	**X^2=981.90**	**G_{adj}=809.78**

$X^2 = 981.90 > \chi^2_{0.001[26]} = 54.05$ $G_{adj} = 809.78 > \chi^2_{0.001[26]} = 54.05$ certainty > 99.999%

The same tests confirm that the 1013 later clausulae contain metrical patterns. Rows in bold contain any patterns that occur more frequently than expected.

Table 4.7: The Later Oratorical Clausulae (*N*=1013)

ID	Pattern	Observed	Probability	Expected	X^2 Partial	*G* Partial
1	˘˘˘˘˘–	4	0.0123	12.5008	5.78	-4.56
2	–˘˘˘˘˘–	6	0.0151	15.2696	5.63	-5.60
3	˘–˘˘˘˘–	6	0.0177	17.9398	7.95	-6.57
4	––˘˘˘˘–	9	0.0216	21.9134	7.61	-8.01
5	˘˘–˘˘˘–	10	0.0181	18.3102	3.77	-6.05
6	–˘–˘˘˘–	12	0.0221	22.3657	4.80	-7.47
7	˘––˘˘˘–	3	0.0259	26.2768	20.62	-6.51
8	–––˘˘˘–	15	0.0317	32.0969	9.11	-11.41
9	˘˘˘–˘˘–	7	0.0110	11.1248	1.53	-3.24
10	–˘˘–˘˘–	**17**	**0.0134**	**13.5888**	**0.86**	**3.81**
11	˘–˘–˘˘–	**23**	**0.0158**	**15.9651**	**3.10**	**8.40**
12	––˘–˘˘–	**22**	**0.0193**	**19.5013**	**0.32**	**2.65**
13	˘˘––˘˘–	**34**	**0.0161**	**16.2947**	**19.24**	**25.01**
14	–˘––˘˘–	**80**	**0.0196**	**19.9038**	**181.45**	**111.29**
15	˘––––˘–	**26**	**0.0231**	**23.3844**	**0.29**	**2.76**
16	–––––˘–	**41**	**0.0282**	**28.5639**	**5.41**	**14.82**
17	˘˘˘˘––	24	0.0273	27.7002	0.49	-3.44
18	–˘˘˘––	**95**	**0.0334**	**33.8355**	**110.57**	**98.07**
19	˘–˘˘˘––	6	0.0392	39.7524	28.66	-11.35
20	––˘˘˘––	6	0.0479	48.5572	37.30	-12.55
21	˘˘–˘––	**45**	**0.0401**	**40.5730**	**0.48**	**4.66**
22	–˘–˘˘––	32	0.0489	49.5596	6.22	-14.00
23	˘––˘––	**149**	**0.0575**	**58.2262**	**141.52**	**140.00**
24	–––˘––	**114**	**0.0702**	**71.1227**	**25.85**	**53.78**
25	˘˘˘–––	12	0.0243	24.6511	6.49	-8.64
26	–˘˘˘–––	20	0.0297	30.1111	3.40	-8.18
27	˘–˘˘–––	**83**	**0.0349**	**35.3767**	**64.11**	**70.78**
28	––˘–––	**71**	**0.0427**	**43.2123**	**17.87**	**35.26**
29	˘˘––––	10	0.0356	36.1069	18.88	-12.84
30	–˘––––	8	0.0435	44.1043	29.56	-13.66
31	˘–––––	14	0.0512	51.8169	27.60	-18.32
32	––––––	9	0.0625	63.2939	46.57	-17.56
Sum		**1013**	**1**	**1013**	**X^2=843.03**	**G_{adj}=777.64**

$X^2 = 843.03 > \chi^2_{0.001[26]} = 54.05$ $G_{adj} = 777.64 > \chi^2_{0.001[26]} = 54.05$ certainty > 99.999%

We can compare the chi-square and results from Table 4.6 and Table 4.7 to establish whether they reflect homogenous or heterogeneous data—whether Muretus' style

changed noticeably over time.[100] In this test, the chi-square test results (X^2) from tables Table 4.6 and Table 4.7 are summed, as are their degrees of freedom (ν). Then, the data from Table 4.6 and Table 4.7 are pooled: for each row, the observed frequencies from each table are added together, and the same is done with the expected frequencies; a new X^2 is calculated from these pooled results. The number of degrees of freedom for the pooled X^2 is calculated in the same way and comes to 26, as the intrinsic hypothesis demands that parameters be subtracted from the total number of categories (patterns). Finally, the X^2 of heterogeneity is the absolute value of the difference between the pooled X^2 is subtracted from the summed X^2; the same procedure is carried out on the degrees of freedom. The X^2 of heterogeneity (32.01) is evaluated against the resultant degrees of freedom (26), and the corresponding χ^2 distribution value, 0.19, gives the probability that the two tables represent statistically different populations.

Table 4.8: Heterogeneity Chi-Square test on Earlier and Later Orations

Set	**Total Patterns (*N*)**	X^2	ν
Earlier	1030	981.90	26
Later	1013	843.06	26
Sum		1824.96	52
Pooled	2043	1792.95	26
$X^2_{heterogeneity}$		**32.01**	**26**
$p_{heterogeneity}$		**0.19**	

$X^2_{heterogeneity} = 32.01 < \chi^2_{0.05[26]} = 38.89$ certainty < 80.73%

[100] Zar, *Biostatistical Analysis*, pp. 471–473. The Chi-Square Test for Heterogeneity is intended to test whether two samples came from the same population. While we know that Muretus was the author of both the earlier and later orations, we do not know yet whether he wrote in his latter years using a style indistinguishable from that of his earlier years.

The G-test statistics were not here used because the adjustment for G-value performed in Table 4.6 and Table 4.7 would distort this test (Zar, p. 471).

The result shows that Table 4.6 and Table 4.7 are statistically similar; we cannot reach even the 95% level of certainty that a difference between the two populations exists. Muretus' practice therefore did not noticeably change over time.

It would be possible to run heterogeneity chi-square analyses on each individual pattern, as measured against the sum of all other patterns, in the fashion of the tests employed above in Table 3.2, but there seems to be little point in continued analysis given that no statistically significant variation appeared either between the syllable distributions or between the results of chi-square tests applied to the two groups of orations. While the earlier orations employ pattern 9 more than expected and the later orations pattern 11, these are marginal values, as evidenced by the fact that they both, along with 12 and 15, did not appear significant in Table 3.2. The slight changes in frequency relative to expectation evinced in patterns 9 and 11 thus should not be taken as evidence of the evolution of Muretus' concept of rhythm.

CHAPTER FIVE: EPISTOLARY CLAUSULAE

Muretus' epistles also seem to employ *numerus*, although of a somewhat different nature from the orations. The same methods of analysis applied to the orations may be applied to the epistles.

The syllable distribution, illustrated in Table 5.1, shows a preference for heavy syllables in all positions, most especially in the fourth and sixth syllables from the end, but less so at the penult.

Table 5.1: Syllable Distribution in Muretus' Epistles (N=1317)

Position	N_{heavy}	p_{heavy}	N_{light}	p_{light}	N_{sum}	P_{sum}
6	799	0.60668185	518	0.39331815	1317	1
5	790	0.59984814	527	0.40015186	1317	1
4	860	0.65299924	457	0.34700076	1317	1
Antepenultimate	775	0.58845862	542	0.41154138	1317	1
Penultimate	695	0.52771450	622	0.47228550	1317	1
Mean:		0.59514047		0.40485953		1

Table 5.2: Distribution of Clausulae in the Epistles (*N*=1317)

ID	Pattern	Observed	Probability	Expected	X^2 Partial	*G* Partial
1	˘˘˘˘˘–	14	0.0106	13.9799	0.00	0.02
2	–˘˘˘˘˘–	14	0.0164	21.5635	2.65	-6.05
3	˘–˘˘˘˘–	11	0.0159	20.9565	4.73	-7.09
4	––˘˘˘˘–	19	0.0245	32.3249	5.49	-10.1
5	˘˘–˘˘˘–	12	0.0200	26.3079	7.78	-9.42
6	–˘˘–˘˘–	32	0.0308	40.5791	1.81	-7.60
7	˘––˘˘˘–	16	0.0299	39.4368	13.93	-14.43
8	––––˘˘–	32	0.0462	60.8302	13.66	-20.56
9	˘˘˘˘–˘–	**23**	0.0152	**19.9897**	**0.45**	**3.23**
10	–˘˘˘–˘–	**33**	0.0234	**30.8335**	**0.15**	**2.24**
11	˘–˘˘–˘–	28	0.0228	29.9655	0.13	-1.90
12	––˘˘–˘–	**51**	0.0351	**46.221**	**0.49**	**5.02**
13	˘˘–––˘–	**44**	0.0286	**37.6173**	**1.08**	**6.90**
14	–˘–––˘–	**119**	0.0441	**58.0236**	**64.08**	**85.47**
15	˘–––˘–	**78**	0.0428	**56.3903**	**8.28**	**25.30**
16	–––––˘–	**96**	0.0660	**86.9804**	**0.94**	**9.47**
17	˘˘˘˘–––	15	0.0119	15.6206	0.02	-0.61
18	–˘˘˘–––	**42**	0.0183	**24.0943**	**13.31**	**23.34**
19	˘–˘˘–––	6	0.0178	23.4161	12.95	-8.17
20	––˘˘–––	8	0.0274	36.1186	21.89	-12.06
21	˘˘–˘–––	**45**	0.0223	**29.3954**	**8.28**	**19.16**
22	–˘–˘–––	**54**	0.0344	**45.3416**	**1.65**	**9.44**
23	˘––––––	**94**	0.0335	**44.0653**	**56.59**	**71.22**
24	–––˘–––	**128**	0.0516	**67.9694**	**53.02**	**81.02**
25	˘˘˘––––	16	0.0170	22.3357	1.80	-5.34
26	–˘˘––––	29	0.0262	34.4522	0.86	-5.00
27	˘–˘––––	**66**	0.0254	**33.4824**	**31.58**	**44.79**
28	––˘––––	**82**	0.0392	**51.6456**	**17.84**	**37.91**
29	˘˘–––––	16	0.0319	42.0322	16.12	-15.45
30	–˘–––––	19	0.0492	64.8335	32.40	-23.32
31	˘–––––	34	0.0478	63.0084	13.36	-20.97
32	––––––	41	0.0738	97.1887	32.48	-35.39
Sum		**1317**	**1**	**1317**	**X^2=439.83**	**G_{adj}=439.97**

$X^2 = 439.83 > \chi^2_{0.001[26]} = 54.05$ $G_{adj} = 439.77 > \chi^2_{0.001[26]} = 54.05$ certainty > 99.999%

Table 5.3: Preferred Patterns Among Muretus' Epistles (*N*=1317)

ID	Pattern	X^2	p (X^2,ν)	Certainty	G_{adj}	p (G_{adj},ν)	Certainty
9	˘˘˘–˘–	0.4603	0.5025	49.75	0.4383	0.5079	50.79
10	–˘˘–˘–	0.1559	0.6929	30.70	0.1521	0.6965	30.35
12	––˘˘˘–	0.5120	0.4742	52.58	0.4950	0.4817	51.83
13	˘˘–˘˘–	1.1148	0.2910	79.90	1.0563	0.3041	69.59
14	–˘–˘˘–	**67.0327**	**2.67E-16**	**> 99.99**	**51.90**	**5.84E-13**	**> 99.99**
15	˘–˘–˘–	**8.6516**	**0.0327**	**99.67**	**7.7467**	**0.0054**	**99.46**
16	––˘–˘–	1.0014	0.3170	68.30	0.9690	0.3249	67.51
18	–˘˘˘––	**13.5546**	**0.0002**	**99.98**	**11.0950**	**0.0009**	**99.91**
21	˘˘–˘––	**8.4728**	**0.0036**	**99.64**	**7.2910**	**0.0069**	**99.31**
22	–˘˘–˘–	1.7124	0.1907	80.93	1.6132	0.2040	79.60
23	˘––˘––	**58.5449**	**1.99E-14**	**> 99.99**	**44.4642**	**2.59E-11**	**> 99.99**
24	––––˘––	**55.9043**	**7.60E-14**	**> 99.99**	**44.8273**	**2.15E-11**	**> 99.99**
27	˘–˘–––	**32.4045**	**1.25E-8**	**>99.99**	**25.3274**	**4.84E-7**	**> 99.99**
28	––˘–––	**18.5688**	**1.63E-5**	**> 99.99**	**15.8148**	**6.99E-5**	**> 99.99**

Specific Patterns of Interest

According to Table 5.3, eight patterns occur significantly more than might be expected; those patterns are reproduced in Table 5.4.

Table 5.4: Preferred Patterns Among the Epistles

2	Pattern	Observed	Expected	Percent of *N*
14	–˘–˘˘–	119	58.0236	9.04
15	˘–˘–˘–	78	56.3903	5.92
18	–˘˘˘––	42	24.0943	3.19
21	˘˘–˘––	45	29.3954	3.42
23	˘––˘––	94	44.0653	7.14
24	––––˘––	128	67.9694	9.72
27	˘–˘–––	66	33.4824	5.01
28	––˘–––	82	51.6456	6.23
Sum		**750**	**452.0467**	**56.9%**

Patterns 9 through 16 (– ∪ ⏑)

Patterns ending with a *creticus*, with the exception of pattern 11, are found more frequently than expected, although only 14 and 15 significantly so (see Table 5.3). These cretic patterns make up together 35.8% of the corpus, or 33.7% if discounting the eleventh pattern. Pattern 11 is equivalent to pure *iambi*, which may account for its relative infrequency; in general, however, the creticus seems to be favored. Pattern 14, the *dicreticus*, was heavily favored in the orations; here it alone makes up over nine percent of the corpus, or a quarter of all the *creticus*-final patterns.

The first half of this group, patterns 9–12, laid out in Table 5.5, shows no significant difference at the fifth syllable from the end; though 9, 10 and 12 happen more often than expected and 11 less often, they all hover around their expectations and do not diverge from their respective expected frequencies significantly; all that can be said for them is that they may reflect a very light general preference for the final *creticus*, but that no preceding foot ending in a short syllable struck Muretus as especially favorable. The other half of the group, patterns 13–16, does include outstanding preferences, such that a long fifth syllable is preferred at above the 99.5% certainty level, as shown in Table 5.6. Upon examination of the two halves of this group, it emerges that no clear distinction exists in the sixth syllable of patterns 15 and 16, demonstrated in Table 5.7.

Table 5.5: Fifth Syllable of Patterns 9–12 (*N*=1317)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 9–12	Long (11–12)	79	80.98	0.05	-1.96
	Short (9–10)	56	54.02	0.07	2.02
	Sum	135	135		
Other	Long	711	709.02	0.01	1.98
	Short	471	472.98	0.01	-1.98
	Sum	1182	1182		
Final Result:				**0.13**	**0.13**

$X^2 = 0.13 < \chi^2_{0.05[1]} = 3.84 \quad G_{adj} = 0.13 < \chi^2_{0.05[1]} = 3.84$ certainty < 28.16%

Table 5.6: Fifth Syllable of Patterns 13–16 (*N*=1317)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 13–16	Long (15–16)	197	175.16	2.72	23.15
	Short (13–14)	95	116.84	4.08	-19.66
	Sum	292	292		
Other	Long	593	614.84	0.78	-21.45
	Short	432	410.16	1.16	22.42
	Sum	1025	1025		
Final Result:				**8.75**	**8.89**

$X^2 = 8.75 > \chi^2_{0.005[1]} = 7.879 \quad G_{adj} = 8.89 > \chi^2_{0.005[1]} = 7.879$ certainty > 99.69%

Table 5.7: Sixth Syllable of Patterns 15–16 (*N*=1317)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 15 & 16	Long (16)	96	105.56	0.87	-9.12
	Short (15)	78	68.44	1.34	10.20
	Sum	174	174		
Other	Long	703	693.44	0.13	9.63
	Short	440	449.56	0.20	-9.46
	Sum	1143	1143		
Final Result:				**2.54**	**2.50**

$X^2 = 2.54 < \chi^2_{0.05[1]} = 3.84 \quad G_{adj} = 2.50 < \chi^2_{0.05[1]} = 3.84$ certainty < 88.62%

The culprit is the *dicreticus*, pattern 14, which is highly favored:

Table 5.8: Sixth Syllable of Patterns 13–14 (*N*=1317)

Group	Length	Observed	Expected	X^2 Test	G_{adj} Test
Patterns 13 & 14	Long (14)	119	98.89	4.09	22.03
	Short (13)	44	64.11	6.31	-16.56
	Sum	163	163		
Other	Long	680	700.11	0.58	-19.82
	Short	474	453.89	0.89	20.55
	Sum	1154	1154		
Final Result:				**11.87**	**12.37**

$X^2 = 11.87 > \chi^2_{0.001[1]} = 10.83 \quad G_{adj} = 12.37 > \chi^2_{0.001[1]} = 10.83 \quad$ certainty > 99.94%

Thus, while Muretus seems to approve of the *creticus* as a final foot so long as the preceding syllables do not become a repetitive iambic meter, he most especially favors the *dicreticus* and, secondarily to that, a *spondeus* preceding a *creticus*.

Pattern 18 (– ∪ ∪ ∪ – ⏑)

The *esse videātur* clausula is clearly preferred (see Table 5.3), but only makes up about three percent of the corpus. Thus, while its frequency relative to expectations raised by its metrical composition may appear high, its overall importance is not.

Patterns 21–24 (– ∪ – ⏑)

Patterns 21–24, the *dichorei*, all occur more than expected, although pattern 22 only marginally so. There is marked difference at the fifth syllable, with preference going to the long syllables, as shown in Table 5.9. There is no difference, however, between the two patterns that have a short at the fifth syllable, clausulae 21 and 22 (Table 5.10). Thus we should treat 21 and 22 as a group like a *pariambodes* (∪ – ∪ – ⏑). Nor is there a strong distinction between patterns 23 and 24 (Table 5.11); this gives a *mesobrachys* (– – ∪ – ⏑). It makes sense then to say that the *dichoreus* is a favored clausula, but more so

when preceded by a foot ending in a long syllable than a short syllable. Examining the seventh and eighth syllables would likely establish exactly what those feet might be.

Table 5.9: Fifth Syllable of Patterns 21–24 (*N*=1317)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 21–24	Long (23–24)	222	192.55	4.50	31.59
	Short (21–22)	99	128.45	6.75	-25.78
	Sum	321	321		
Other	Long	568	597.45	1.45	-28.71
	Short	428	398.55	2.18	30.51
	Sum	996	996		
Final Result:				**14.88**	**15.20**

$X^2 = 14.88 > \chi^2_{0.001[1]} = 10.83$ $G_{adj} = 15.20 > \chi^2_{0.001[1]} = 10.83$ certainty > 99.98%

Table 5.10: Sixth Syllable of Patterns 21–22 (*N*=1317)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 21 & 22	Long (22)	54	60.06	0.61	-5.74
	Short (21)	45	38.94	0.94	6.51
	Sum	99	99		
Other	Long	745	738.94	0.05	6.09
	Short	473	479.06	0.08	-6.02
	Sum	1218	1218		
Final Result:				**1.68**	**1.66**

$X^2 = 1.68 < \chi^2_{0.05[1]} = 3.84$ $G_{adj} = 1.66 < \chi^2_{0.05[1]} = 3.84$ certainty < 80.24%

Table 5.11: Sixth Syllable of Patterns 23–24 (*N*=1317)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 23 & 24	Long (24)	128	134.68	0.33	-6.51
	Short (23)	94	87.32	0.51	6.93
	Sum	222	222		
Other	Long	671	664.32	0.07	6.72
	Short	424	430.68	0.10	-6.63
	Sum	1095	1095		
Final Result:				**1.01**	**1.01**

$X^2 = 1.01 < \chi^2_{0.05[1]} = 3.84$ $G_{adj} = 1.01 < \chi^2_{0.05[1]} = 3.84$ certainty < 68.51%

Patterns 27–28 (– ⏑ – – ⏒)

Patterns 27 and 28 share a *hypobrachys*. They share a *molossus* with patterns 25 and 26, but those are both used less frequently than can be expected. Nor are the frequencies for patterns 27 and 28 statistically unusual at the sixth syllable:

Table 5.12: Sixth Syllable of Patterns 27–28 (*N*=1317)

Group	**Length**	**Observed**	**Expected**	**X^2 Test**	**G_{adj} Test**
Patterns 23 & 24	Long (24)	82	89.79	0.68	-7.44
	Short (23)	66	58.21	1.04	8.29
	Sum	148	148		
Other	Long	717	709.21	0.09	7.83
	Short	452	459.79	0.13	-7.72
	Sum	1169	1169		
Final Result:				**1.94**	**1.91**

$X^2 = 1.94 < \chi^2_{0.05[1]} = 3.84$ $G_{adj} = 1.91 < \chi^2_{0.05[1]} = 3.84$ certainty < 83.31%

The *hypobrachys* must then be favorable: this pattern becomes more recognizable when split between the antepenult and the penult, giving a *creticus* and *spondeus*, the equivalent of pattern 18 (*esse videātur*).

Conclusions

Muretus appears, in his epistles, to favor:

1) The final *creticus*,
    a) Especially with another *creticus* preceding it,
    b) Or with a *spondeus* preceding it,
    c) Or as long as the clausula does not devolve into a string of *iambi*;
2) The *dichoreus*,
    a) Especially with a preceding foot that ends in a long syllable,
    b) But also with a preceding foot ending in a short syllable; and
3) The *spondeus* preceded by the *creticus*,
    a) Or the same with the final long syllable of the *creticus* resolved, as in *esse videātur*.

This list share some commonalities with that of Muretus oratorical clausulae, but also shows some differences, especially in its simplicity. The style is a bit more relaxed, although the *creticus*, *dichoreus* and the *creticus* + *spondeus* combination are still its core principles. A comparison of the orations and epistles is in order to demonstrate the degree to which this style is more relaxed.

CHAPTER SIX: COMPARISON OF THE ORATIONS AND THE EPISTLES

Syllable Distribution

The distribution of heavy and light syllables in each syllable position (see Table 2.1 and Table 5.1) reveals significant differences:

Table 6.1: Comparison of Syllable Distributions in Orations and Epistles

	Observed		Expected		X2 Partial Calculations		G Partial Calculations	
	Or.	**Ep.**	**Or.**	**Ep.**	**Orations**	**Epistles**	**Orations**	**Epistles**
Heavy	1257	799	1313.1	742.9	2.3995	4.2415	-54.9153	58.2018
	1391	790	1393.0	788.0	0.0028	0.0049	-1.9665	1.9704
	1351	860	1412.1	798.9	2.6461	4.6774	-59.7858	63.4096
	1065	775	1175.2	664.8	10.3295	18.2589	-104.8428	118.8401
	1626	695	1482.4	838.6	13.9139	24.5949	150.3590	-130.5499
Light	1071	518	1014.9	574.1	3.1047	5.4880	57.6570	-53.2944
	937	527	935.0	529.0	0.0041	0.0073	1.9700	-1.9642
	977	457	915.9	518.1	4.0799	7.2119	63.1244	-57.3716
	1263	542	1152.8	652.2	10.5298	18.6130	115.2817	-100.2971
	702	622	845.6	478.4	24.3913	43.1154	-130.6650	163.2920
Results					**X^2:**	**197.61**	**G_{adj}:**	**196.83**
Probabilities for ν=9:					p:	1.05E-37	p:	1.53E-37

$X^2 = 197.61 > \chi^2_{0.001[9]} = 27.88$ $G_{adj} = 196.83 > \chi^2_{0.001[9]} = 27.88$ certainty > 99.999%

The antepenult and penult are especially striking: while the orations strongly favor a heavy penult, the epistles only mildly favor it. The antepenult in the orations is more likely to be light than heavy, and is the only syllable more likely to be light than heavy; this allows for a heavy emphasis on final *cretici*. In the epistles, however, a heavy syllable is always more likely than a light, even in the antepenult.

The epistles also more strongly favor a heavy fourth syllable than a heavy fifth syllable from the end of the sentence, while the orations favor heavy syllables in those positions almost equally.

Chi-Square Test of Homogeneity

The chi-square test of homogeneity reveals that the orations and epistles are heterogeneous with respect to the clausular preferences manifested in each.

Table 6.2: Heterogeneity of Muretus' Orations and Epistles

Set	**Total Patterns (*N*)**	X^2	**ν**
Orations	2328	1999.45	26
Epistles	1317	493.28	26
Sum	3645	2493.28	52
Pooled	3645	2190.37	26
$X^2_{heterogeneity}$		**302.91**	**26**
$p_{heterogeneity}$		**5.52E-49**	

$X^2_{heterogeneity} = 302.91 > \chi^2_{0.001[26]} = 54.05$ certainty > 99.999%

Muretus employs a different system of *numerus* in his epistles from that in his orations, a finding not inconsistent with the differences in syllable distributions across the orations. Because the populations are clearly heterogeneous, it would not be advisable to pool them to investigate preferred clausulae in the combined results.

The orations are, in general, more rhythmic than the epistles. Most likely, this is a result of the nature of each genre: orations are more a creature of public oral performance and aural pleasure. Published letters, while public and very likely polished, nevertheless do not demand, at least not with as great a necessity, the elocutionary pyrotechnics of oratorical *numerus*, though they doubtless appeared impressive to the Humanist reader versed in Ciceronian rhythmic practice and who would be looking for a *creticus*, a *dichoreus*, or a final *spondeus* with the well-known *esse videātur* beat.

Other variables might also affect the frequency of metrically decorative clausulae in the epistles. Content may also influence the degree to which Muretus was able or willing

to seek metrical rhythm: long blocks of textual criticism or literary notes may be less apt for metrical flair. Certain recipients, such as the king of Poland, might be more likely to receive a highly polished letter, and one likely meant to be read aloud and publicly, than others. More advanced statistical techniques can determine this, but the limited amount of data available makes conclusions tenuous: letters are short, and some recipients receive only one.

Regardless, it is certain that Muretus employed a system of *numerus* in his epistles, one of roughly the same sort as his oratorical *numerus*, but also one less rigorously applied.

CHAPTER SEVEN: EXTERNAL COMPARISON

The method of internal comparison demonstrates according to accepted statistical procedures and with a high level of certainty that Muretus employed a system of prose rhythm. While the work of Janson, Aili, Tunberg, Orlandi, and other scholars employing internal comparison has shown its validity, reliability, and usefulness, it might be objected that some external comparison would provide a means of checking these results.

Various forms of external comparison have existed since the late nineteenth century; many of them compare a text under investigation with control texts assumed to lack metrical features. This assumption is, of itself, somewhat dangerous, as one must guarantee the control texts are non-metrical. Generally, the proponents of external comparison employ their method on several control texts simultaneously to establish that none of the control texts differs significantly from the others, that they are all more or less equally non-metrical; this mitigates the risk of contaminating the results of external comparison by a faulty assumption within the control.

Oberhelman and Hall employ modern statistical methods for establishing confidence intervals for making these comparisons, which shall also obtain here.[101] To make the external comparisons, we shall assume Muretus' favored clausulae are, for the orations, those summarized in

[101] Steven M. Oberhelman, *Rhetoric and Homiletics in Foruth-Century Christian Literature* (Atlanta, GA: American Philologial Association, 1991), pp 9–10; cf. also Steven M. Oberhelman and Ralph G. Hall, "A New Statistical Analysis of Accentual Prose Rhythms in Imperial Latin Authors," *Classical Philology* (The University of Chicago Press) 79, no. 2 (April 1984), pp. 120–121.

Table 3.3 and Table 5.4: those patterns passed the chi-square and G-tests for significance at a length of six syllables; there can be no mistake that Muretus favored these. We shall measure Muretus against Tacitus, as a non-rhythmic control, and Cicero, as a decidedly rhythmic sample.

The formula we shall use to determine the confidence intervals for the proportions is:

$$\hat{p} \pm 1.96\sqrt{\frac{\hat{p}(1-\hat{p})}{N}}$$

Where $\hat{p}$ is the proportion being tested, N the total sample size, and 1.96 a constant derived from the standard normal distribution for a confidence level of 95%. Using these confidence intervals, we can be more certain that we are comparing the highest possible limits of the proportion of Muretus' favored oratorical clausulae found in the control text to the lowest possible limits of Muretus' possible proportion to ensure that the difference between the two is real.

Comparison samples include the 2328 clausulae of the orations, 250 clausulae drawn from Tacitus, *Annales* 11–12, and 572 Ciceronian clausulae from Cicero's *Pro Murena* (310 clausulae) and *Pro Sulla* (262 clausulae).

Table 7.1 Proportions of Muretus' favored oratorical clausulae in Muretus, selected Ciceronian orations and Tacitus' *Annales*

Comparison Text	$\hat{p}$	$\hat{p} \pm c$	$\hat{p}_{\max}$	$1-\hat{p}_{\max}$	$\hat{p}_{\min}$	$1-\hat{p}_{\min}$
Muretus' Orations	0.684	0.665–0.703	0.703	0.297	0.665	0.335
Cicero: Murena, Sulla[102]	0.752	0.716–0.787	0.787	0.213	0.716	0.284
Tacitus: Annales 11–12[103]	0.408	0.347–0.469	0.469	0.531	0.347	0.653

[102] Data is from Hans Aili, *Prose Rhythm in Sallust and Livy*, table A1, p. 136.

This gives us the following contingency table of proportions.

Table 7.2: Contingency Table for Muretus vs. Tacitus as Proportions

	Favored	Not Favored
Muretus	$\hat{p}_{\min} = 0.665$	$1 - \hat{p}_{\min} = 0.335$
Tacitus	$\hat{p}_{\max} = 0.469$	$1 - \hat{p}_{\max} = 0.531$

Converted to frequencies, the contingency table reads:

Table 7.3: Contingency Table for Muretus vs. Tacitus as Freqencies

	Favored	Not Favored	Row Total
Muretus	1548.12	779.88	2328
Tacitus	117.25	132.75	250
Column Total	1665.37	912.63	2578

We can then perform a chi-square test on these results using the formula

$$\chi^2 = \frac{n\left(f_{11}f_{22} - f_{12}f_{21}\right)^2}{R_1R_2C_1C_2}$$

where n represents the total population, f a frequency cell in the contingency table with subscripts denoting the column and row to which it belongs, and R and C row and column totals similarly subscripted. Employing Haber's correction for continuity,[104] the formula is revised to

$$\chi^2 = \frac{n^3D^2}{R_1R_2C_1C_2}$$

[103] Hans Aili investigated Tacitus in his *Prose Rhythm in Sallust and Livy* and found no evidence of clausulae using his internal methods (pp.128–129). Data is from table A8, p. 143.

[104] See Jerrold H. Zar, *Biostatistical Analysis*, p. 494.

where *D* is either the largest multiple of 0.5 that is less than the absolute value of the difference of the smallest expected frequency and its corresponding observed frequency or that same difference less 0.5, depending on whether that same observed frequency is less than or greater than twice the expected frequency.

For the comparison of Muretus and Tacitus, the smallest expected frequency is given by the calculation

$$\hat{f} = \frac{smallest\ row\ total \cdot smallest\ column\ total}{n}$$
$$\hat{f} = \frac{250 \cdot 912.63}{2578}$$
$$\hat{f} = \hat{f}_{22} = 88.5017455$$

This corresponds to the observed frequency of 132.75, which is less than twice the expected frequency, and thus D will be the largest multiple of 0.5 less than the difference between these two frequencies, that is, 44. This lets us calculate the corrected chi-square statistic thus:

$$\chi^2_{c'} = \frac{n^3 D^2}{R_1 R_2 C_1 C_2} = \frac{2578^3 \cdot 44^2}{2328 \cdot 250 \cdot 1665.37 \cdot 912.63}$$
$$\chi^2_{c'} = 37.4995132 > \chi^2_{0.001[1]} = 10.828 \quad \text{certainty} > 99.999\%$$

Thus the corrected value is above the critical value for significance at the 99.9% level, so we can be certain that Muretus used his favored rhythms significantly more often than Tacitus, or, to put it another way, than an author unconcerned with rhythm. Muretus thus clearly seems to have employed a system of prose rhythm.

To make the comparison with Cicero, we need to modify the initial setup of the contingency table: in Cicero's works, the range of proportions of Muretus' oratorical clausulae that falls within the limits of the confidence interval is greater than that found in

Muretus, and so we should compare the upper limits of Muretus to Cicero's lower limits to determine whether there exists a statistically significant difference between these ranges. The contingency table for frequencies, computed from the proportions given in Table 7.1, reads as follows:

Table 7.4: Contingency Table for Muretus vs. Cicero as Frequencies

	Favored	Not Favored	Row Total
Muretus	1636.584	691.416	2328
Cicero	409.552	162.448	572
Column Total	2046.136	853.864	2900

The smallest expected frequency is again for row 2, column 2, and stands at 168.417313, which, doubled, is greater than the corresponding observed frequency of 162.448; thus the *D* of Haber's correction is the largest multiple of 0.5 that is less than the difference between the two frequencies, or 5.5. Thus we may perform the chi-square test, corrected for continuity, as follows:

$$\chi^2_{c'} = \frac{n^3 D^2}{R_1 R_2 C_1 C_2} = \frac{2900^3 \cdot 5.5^2}{2328 \cdot 572 \cdot 2056.136 \cdot 853.864}$$

$$\chi^2_{c'} = 0.317115279 < \chi^2_{0.50[1]} = 0.455 \quad \text{certainty} < 42.65\%$$

Thus there cannot be even a 50% certainty that Muretus and Cicero used these rhythms with any significant difference in frequency, let alone the 95% level that we would require as a minimum of confidence for making any assertion. Thus, by external comparison, we may assert that Muretus' frequency of the use of his *numerus* resembles Cicero's frequency of the use of the same rhythms.

CHAPTER EIGHT: ACCENTUAL RHYTHM (*CURSUS*)

The prevailing view, demonstrated above on pp. 8ff., is that Humanist authors avoided *cursus*, or accentually based rhythm. Whether or not this is true of Muretus can be determined from statistical analysis of his text.[105]

For the purposes of accentual rhythm, it suffices to know the length and stress accent (paroxytone, abbreviated *p*, or proparoxytone, *pp*) of the final word and the accent of the penultimate word: thus the familiar *ésse videátur* pattern would be said to consist of a paroxytone and a tetrasyllabic paroxytone, rendered in abbreviation as *p 4p*. Interestingly, while these very words are stereotypical of Ciceronian prose, the pattern *p 4p* is not generally favored among all authors employing *cursus*; it forms the so-called *trispondiacus* rhythm of the northern French and German system of cursus up to the eleventh century and plays a role in French cursus in the twelfth, but otherwise is not favored.[106] Instead, the most common patterns in accentually rhythmic prose are shown in Table 8.1, where the letter "s" denotes an unaccented syllable, "Ś" an accented syllable.

Table 8.1: Typical *Cursus* Patterns

Planus	p 3p	Ś s	s Ś s	dixísse volémus
Tardus	pp 3pp	Ś s s	Ś s s	dícere vóluit
	p 4pp	Ś s	s Ś s s	dixísse volebámus
Velox	pp 4p	Ś s s	s s Ś s	dícere voluérunt

[105] Tore Janson, *Prose Rhythm in Medieval Latin from the 9th to the 13th Century* (Stockholm: Almquist & Wiksell International, 1975), pp. 10–34, established the basic methodology for an internal comparative analysis using chi-square tests, along with external comparison.

[106] Janson, pp. 58, 74, 104.

These four forms are related, in that *cursus* employing trisyllabic ultimate words typically also has a matching stress accent on the penultimate word, while that with a tetrasyllabic ultimate word typically has the opposite stress accent, giving an easy rule for producing all four forms.[107] As with metrical rhythm, however, there is no one definitive system of *cursus*, but rather several localized traditions; the system outlined in Table 8.1 merely serves as a general guide. It also serves as a touchstone against which we may evaluate Muretus: when testing the hypothesis that he did not employ accentual rhythm, these are exactly the forms one would not hope to find used significantly more often than expected, if any are.

A second, complicating inference may be drawn from Table 8.1: the stress accent may be influenced by metrical rhythm. The Latin stress accent, falling in the penultimate or antepenultimate syllable, depends on the metrical length of the penultimate vowel, according to the law of the penult. Thus the *cursus tardus* may be triggered by accident if the author strives for a quite Ciceronian *dicreticus*, the *planus* by a *creticus* and *spondeus* (or by the *clausula heroa*), and the velox by a *creticus* and *dichoreus*. This is hardly an accident, for the *cursus* systems are derived from the accentual-metrical *cursus mixtus*, which in turn comes from the Ciceronian system. And so we must be wary of the hypothesis outlined above, because Muretus' strong preference for *numerus* might accidentally trigger *cursus*. The question becomes one of degree: to what extent does Muretus' prose show accentual rhythm, and is this a byproduct of his metrical rhythm?

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[107] That this rule was taught in the middle ages is clear from Janson's third appendix; see especially Text 1 treatise 2 (pp. 119–121). Many other, more complicated rules are also included in these appendices; Janson traces in them and throughout his book the various schools of thought on *cursus* from the ninth through thirteenth centuries.

Oratorical Cursus

The oratorical corpus yielded 2281 clausulae whose accentual structure was clear. While words of one to seven syllables were observed in sentence-final position, only clausulae containing ultimate words of two to five syllables were considered for analysis. Monosyllables might have some sort of enclitic effect, and thus the analysis of their accentual rhythm is uncertain. Words of more than three syllables might or might not have a secondary stress accent on the initial syllable; at the word length of five syllables, this would interfere with the analysis of *cursus planus*, as defined in Table 8.1, and at six syllables the word would subsume any of the four major types of *cursus*. This does not present much of a problem: as Table 8.2 demonstrates, only three percent of the clausulae in the orations have a monosyllabic final word, and less than one percent have a final word of six or seven syllables.

In fact, words of three and four syllables dominate the corpus. Trisyllables make up 26% of the clausulae in Table 8.2, and tetrasyllables 42%; in all, there is a 68% chance that the final word of a clausula will be of either three or four syllables in length. This reinforces the complications arising from the interaction of metrical and accentual patterns: the number of likely combinations of stress accent and metrical lengths permitted by those stress accents is reduced.

The distribution of accentual clausulae does not appear to be the product of a coincidence, as demonstrated in Table 8.3. In fact, those clausulae described in Table 8.1 occur more often than a random distribution of their constituent elements would bring about. Patterns ending in 1, 2, 5, 6 and 7 syllables are grouped under “others.”

Table 8.2: Distribution of Accentual Forms in Muretus' Orations (*N*=2281)

ID	Obs	Pct (%)	ID	Obs	Pct (%)	ID	Obs	Pct (%)
1 7p	0	0.00	1 4p	59	2.59	1 2	68	2.98
p 7p	2	0.09	p 4p	344	15.08	p 2	219	9.60
pp 7p	1	0.04	**pp 4p**	**374**	**16.40**	pp 2	153	6.71
1 6p	2	0.09	1 4pp	15	0.66	1 1	1	0.04
p 6p	7	0.31	**p 4pp**	**131**	**5.74**	p 1	56	2.46
pp 6p	3	0.13	pp 4pp	40	1.75	pp 1	13	0.57
1 6pp	0	0.00	1 3p	15	0.66			
p 6pp	1	0.04	**p 3p**	**328**	**14.38**			
pp 6pp	3	0.13	pp 3p	46	2.02			
1 5p	16	0.70	1 3pp	23	1.01			
p 5p	88	3.86	p 3pp	84	3.68			
pp 5p	77	3.38	**pp 3pp**	**92**	**4.03**			
1 5pp	5	0.22						
p 5pp	10	0.44						
pp 5pp	5	0.22						
Sum	**220**	**9.65%**		**1551**	**68.00%**		**510**	**22.36%**

Table 8.3: Analysis of Distribution of Oratorical Accentual Patterns (*N*=2281)

Pattern	Observed	Expected	χ^2 Test	G-Test
1 4p	59	69.49	1.58	-9.66
p 4p	344	432.61	18.15	-78.84
pp 4p	**374**	**274.90**	**35.73**	**115.14**
1 4pp	15	16.63	0.16	-1.55
p 4pp	**131**	**103.56**	**7.27**	**30.79**
pp 4pp	40	65.81	10.12	-19.92
1 3p	15	34.79	11.26	-12.62
p 3p	**328**	**216.58**	**57.32**	**136.14**
pp 3p	46	137.63	61.00	-50.41
1 3pp	23	17.80	1.52	5.89
p 3pp	84	110.80	6.48	-23.26
pp 3pp	**92**	**70.40**	**6.63**	**24.62**
Others	730	730.00	0.00	0.00
Sum	**2281**	**2281**	**X^2=217.22**	**G_{adj}=232.08**

$X^2 = 217.22 > \chi^2_{0.001[5]} = 20.52$ $G_{adj} = 232.08 > \chi^2_{0.001[5]} = 20.52$ certainty > 99.999%

From the data, it is clear that accentual rhythm exists in Muretus' orations. The forms that occur more often than expected are presented in Table 8.4.

Table 8.4: Preferred *Cursus* in Muretus' Orations

Pattern	Frequency	Proportion	Type
pp 4p	374	16.40%	*Velox*
p 3p	328	14.38%	*Planus*
p 4pp	131	5.74%	*Tardus*
pp 3pp	92	4.03%	*Tardus*
Sum	**925**	**40.55%**	

Around 41% of the oratorical corpus, or 60% of all the clausulae ending in a three or four syllable word, thus falls into the four major forms of *cursus*. While this is not a negligible number, it falls far short of the proportion of clausulae conforming to one of the preferred metrical patterns found in Table 3.3. This is a good hint that Muretus primarily seeks to achieve metrical rhythm in his orations, and that the accentual rhythm detected in Table 8.3 is a natural byproduct of Muretus' utilization of a small number of metrical rhythms within the limited space provided by primarily trisyllabic and tetrasyllabic final words. Examining the metrical composition of the clausulae making up the *cursus velox, planus*, and *tardus* forms in Table 8.4 further illustrates this hypothesis.

Cursus Velox

Among the *velox* clausulae, metrical pattern 23 stands out, as demonstrated in table Table 8.5. The same method of calculating probability as employed in the earlier metrical analyses, namely using the observed data to find the probability of a long or short in each position and then multiplying to find the probability of the observed pattern, yields the expected frequencies of that table, from which the chi-square and G tests can be cal-

culated to see whether the metrical patterns are randomly distributed through the accentual clausula. The results are given in Table 8.5.[108]

Table 8.5: *Cursus Velox* in the Orations (N=266; dropped 8 clausulae).

ID	Pattern	Observed	Expected	χ^2 Test	G Test
17	⏑ ⏑ | ⏑ ⏑ – ⏓	32	18.65	9.55	17.27
19	⏑ – | ⏑ ⏑ – ⏓	12	47.63	26.65	-16.54
21	⏑ ⏑ | – ⏑ – ⏓	53	68.87	3.66	-13.88
23	**⏑ – | – ⏑ – ⏓**	**214**	**175.85**	**8.28**	**42.02**
25	⏑ ⏑ | ⏑ – – ⏓	7	3.30	4.15	5.27
27	**⏑ – | ⏑ – – ⏓**	**27**	**8.42**	**40.97**	**31.45**
29	⏑ ⏑ | – – – ⏓	11	12.18	0.11	-1.12
31	⏑ – | – – – ⏓	10	31.10	14.31	-11.35
Sum		**366**	**366**	**X^2=107.68**	**G_{adj}=105.48**

$X^2 = 107.68 > \chi^2_{0.001[4]} = 18.47$ $G_{adj} = 105.48 > \chi^2_{0.001[4]} = 18.47$ certainty > 99.999%

The *velox* clausula clearly owes a great debt to pattern 23, which makes up around 58% of all the *velox* clausulae. Though pattern 21 ranks next in observed frequency, it occurs less than expected among the *velox* clausulae; in fact, beyond pattern 23, only patterns 27 (~7%), 17 (~9%), and 25 (~2%) occur more often than expected, making up around 18% of the *velox* patterns. Of these, the earlier metrical analysis revealed that Muretus preferred pattern 27, but not 17 or 25. The combination of metrical patterns 23 and 27, known to be preferred, thus explain roughly 66% of the *cursus velox* detected in the orations.

[108] Eight clausulae were dropped; clausulae are dropped when, within some clausula, the metrical pattern cannot be fully determined for the final six syllables even though accent and length for the final two words can be determined. For example, if the final word were "abraxas," the penult, being long by virtue of the letter "x," would give a metrical pattern of *3p*, but the initial syllable would be of uncertain metrical quality, as the "br" mute and liquid combination might or might not give a heavy syllable. Thus "abraxas" could be analyzed for accentual rhythm but not for the metrical clausulae that seem to bring about the accentual *cursus*.

Cursus Planus

The *cursus planus* presents a slightly more complex picture. By virtue of the nature of the *p 3p cursus planus*, the penultimate syllable of the penultimate word should be long, this doesn't necessary hold true for penultimate disyllables (as in *fore vidētur*). Thus the metrical composition of the *cursus planus* is spread over the entire range of patterns 17-32, as shown in Table 8.6.

Table 8.6: *Cursus Planus* in the Orations (*N*=300; dropped 28 clausulae)

ID	Pattern	Observed	Percent (%)
17	⏑ | ⏑ ⏑ | ⏑ – ⏓	0	0.00
18	– | ⏑ ⏑ | ⏑ – ⏓	1	0.33
19	⏑ – ⏑ | ⏑ – ⏓	6	2.00
20	– – ⏑ | ⏑ – ⏓	6	2.00
21	⏑ | ⏑ – | ⏑ – ⏓	1	0.33
22	– | ⏑ – | ⏑ – ⏓	6	2.00
23	**⏑ – – | ⏑ – ⏓**	**51**	**17.00**
24	**– – – | ⏑ – ⏓**	**51**	**17.00**
25	⏑ | ⏑ ⏑ | – – ⏓	0	0.00
26	– | ⏑ ⏑ | – – ⏓	4	1.33
27	**⏑ – ⏑ | – – ⏓**	**86**	**28.67**
28	**– – ⏑ | – – ⏓**	**73**	**24.33**
29	⏑ | ⏑ – | – – ⏓	0	0.00
30	– | ⏑ – | – – ⏓	1	0.33
31	⏑ – – | – – ⏓	7	2.33
32	– – – | – – ⏓	7	2.33
Sum		**300**	**100%**

As the frequencies of *planus* clausulae having penultimate words with short penultimate syllables, let them be combined into a single category (⏑ ⏓ \| ⏓ – –) representing those clausulae with disyllabic first words. This will facilitate the chi-square test and G-

test, given in Table 8.7, demonstrating that the distribution of *planus* clausulae is not random.

Table 8.7: *Planus* Clausulae Regrouped (*N*=300)

ID	Pattern	Observed	Expected	χ^2 Test	G Test
19	⏑ – ⏑ | ⏑ – ⏓	6	34.46	23.51	-10.49
20	– – ⏑ | ⏑ – ⏓	6	34.01	23.07	-10.41
23	**⏑ – – | ⏑ – ⏓**	**51**	**24.28**	**29.40**	**37.85**
24	**– – – | ⏑ – ⏓**	**51**	**23.96**	**30.52**	**38.53**
27	**⏑ – ⏑ |– – ⏓**	**86**	**50.28**	**25.37**	**46.15**
28	**– – ⏑ |– – ⏓**	**73**	**49.62**	**11.02**	**28.19**
31	⏑ – – | – – ⏓	7	35.43	22.81	-11.35
32	– – – | – – ⏓	7	34.96	22.36	-11.26
Other	⏓ ⏑ ⏓ | ⏓ – ⏓	13	13.00	0.00	0.00
Sum		**300**	**300**	**χ^2=188.05**	**G_{adj}=212.06**

$X^2 = 188.05 > \chi^2_{0.001[4]} = 18.47$ $G_{adj} = 212.06 > \chi^2_{0.001[4]} = 18.47$ certainty > 99.999%

Patterns 23 and 24 along with 27 and 28 are preferred to the others, and the *planus* consists almost entirely of them; together, they make up 87% of the *planus* clausulae. These same four patterns were shown in Table 3.2 to be preferred metrical patterns.

Of these, patterns 23 and 24 appear to take the form of a *dichoreus* with a caesura after the first syllable of the *dichoreus*, while patterns 27 and 28 comprise a *creticus* and *spondeus* with a caesura after the light syllable of the *creticus*.

Cursus Tardus

For the same reason as in the *cursus planus*, the clausulae of the *p 4pp cursus tardus* are spread over sixteen categories: a penultimate disyllable may have a light penult and still have a paroxytone accent. The distribution is shown in Table 8.8.

Table 8.8: *Cursus Tardus (p 4pp)* in the Orations (*N*=300; dropped 14 clausulae)

ID	Pattern	Observed	Percent (%)
1	⏑ ⏑ | ⏑ ⏑ ⏑ ⏓	0	0.00
2	– ⏑ | ⏑ ⏑ ⏑ ⏓	5	4.27
3	⏑ – | ⏑ ⏑ ⏑ ⏓	0	0.00
4	– – | ⏑ ⏑ ⏑ ⏓	4	3.42
5	⏑ ⏑ | – ⏑ ⏑ ⏓	0	0.00
6	– ⏑ | – ⏑ ⏑ ⏓	11	9.40
7	⏑ – | – ⏑ ⏑ ⏓	2	1.71
8	– – | – ⏑ ⏑ ⏓	10	8.55
9	⏑ ⏑ | ⏑ – ⏑ ⏓	1	0.85
10	– ⏑ | ⏑ – ⏑ ⏓	3	2.56
11	⏑ – | ⏑ – ⏑ ⏓	1	0.85
12	– – | ⏑ – ⏑ ⏓	2	1.71
13	⏑ ⏑ | – – ⏑ ⏓	3	2.56
14	**– ⏑ | – – ⏑ ⏓**	**59**	**50.43**
15	⏑ – | – – ⏑ ⏓	3	2.56
16	– – | – – ⏑ ⏓	13	11.11
Sum		**117**	**100%**

Pattern 14, the *dicreticus*, makes up half the population and thus stands out from the rest of the data, occurring more often than expected by a margin that is significant to at least a 95% level of certainty, as demonstrated by Table 8.9. Of all *dicreticus* clausulae in the corpus, a third fall under the *p 4pp* variant of the *cursus tardus*, and without the influence of *dicreticus*, the frequency category of *cursus* would draw no attention. Thus we may chalk up the *p 4pp tardus* to the influence of the metrical *dicreticus*.

Table 8.9: The *Dicreticus* in Oratorical *p 4pp Cursus Tardus*

ID	Pattern	Observed	Expected	χ^2 Test	G Test
14	– ◡ | – – ◡ ⏑	59	47.03	3.05	13.38
Others		58	69.97	2.05	-10.88
Sum		**117**	**117**	**χ^2=5.09**	**G_{adj}=4.97**

$X^2 = 5.09 > \chi^2_{0.025[1]} = 5.02$ $G_{adj} = 4.97 > \chi^2_{0.05[1]} = 3.84$ certainty > 97.42%

The *pp 3pp cursus tardus* is more constrained with respect to the metrical patterns it comprises, as the penultimate and fifth syllable must both be light. Thus only eight metrical patterns may express this variation on the *cursus tardus*; these are given in Table 8.10.

Table 8.10: *Cursus Tardus (pp 3pp)* in the Orations (*N*=85; dropped 7 clausulae)

ID	Pattern	Observed	Percent (%)
1	◡ ◡ ◡ | ◡ ◡ ⏑	3	3.53
2	– ◡ ◡ | ◡ ◡ ⏑	2	2.35
5	◡ ◡ – | ◡ ◡ ⏑	8	9.41
6	– ◡ – | ◡ ◡ ⏑	9	10.59
9	◡ ◡ ◡ | – ◡ ⏑	1	1.18
10	– ◡ ◡ | – ◡ ⏑	3	3.53
13	**◡ ◡ – | – ◡ ⏑**	**28**	**32.94**
14	**– ◡ – | – ◡ ⏑**	**31**	**36.47**
Sum		**85**	**100%**

Patterns 13 and 14, both favored throughout the orations in general, are the driving force behind the prominence of the *pp 3pp cursus tardus*. Together they explain 69% of the *cursus tardus* clausulae.

Conclusions on Oratorical Cursus

It seems that certain prominent metrical clausulae explain the majority of cases of the various traditional categories *cursus* evidenced in Muretus' orations. We can gain some insight into how well these explanations hold by examining the proportion of each category of *cursus* each metrical pattern explains.

Table 8.11: Summary of Major Intersections of Meter and Accent[109]

ID	Pattern	*Planus (p3p)*	*Velox (pp 4p)*	*Tardus 4 (p 4pp)*	*Tardus (pp 3pp)*
13	⏑ ⏑ – – ⏑ ⏓			2.56%	32.94%
14	– ⏑ – – ⏑ ⏓			50.43%	36.47%
23	⏑ – – ⏑ – ⏓	17.00%	58.47%		
24	– – – ⏑ – ⏓	17.00%			
27	⏑ – ⏑ – – ⏓	28.67%	7.38%		
28	– – ⏑ – – ⏓	24.33%			
Sum		**87.00%**	**65.85%**	**52.99%**	**69.41%**

In Table 8.11, each metrical pattern is expressed as a percentage of the total population of the *cursus* form represented by the column. It is possible to explain more than half of any major accentual pattern with only these six metrical patterns; thus it seems the accentual rhythm in the orations is a byproduct of Muretus' desire for metrical rhythm.

[109] This table measures the proportion of each metrical clausulae against the sum total of the clausulae adhering to the type of cursus indicated by the column heading and for which both metrical and accentual rhythm could be determined.

Epistolary Clausulae

Among the epistles are 1319 clausulae that contain sufficient information to be analyzed for accentual rhythm, as given in Table 8.12.

Table 8.12: Distribution of Accentual Forms in Muretus' Epistles (*N*=1319)

ID	Obs	Pct (%)	ID	Obs	Pct (%)	ID	Obs	Pct (%)
1 7p	0	0.00	1 4p	41	3.11	1 2	102	7.73
p 7p	1	0.08	p 4p	108	8.19	p 2	187	14.18
pp 7p	0	0.00	**pp 4p**	**78**	**5.91**	pp 2	133	10.08
1 6p	1	0.08	1 4pp	17	1.29	1 1	11	0.83
p 6p	3	0.23	**p 4pp**	**73**	**5.53**	p 1	50	3.79
pp 6p	2	0.15	pp 4pp	25	1.90	pp 1	3	0.23
1 6pp	2	0.15	1 3p	44	3.34			
p 6pp	1	0.08	**p 3p**	**134**	**10.16**			
pp 6pp	0	0.00	pp 3p	42	3.18			
1 5p	5	0.38	1 3pp	35	2.65			
p 5p	17	1.29	p 3pp	97	7.35			
pp 5p	16	1.21	**pp 3pp**	**78**	**5.91**			
1 5pp	3	0.23						
p 5pp	7	0.53						
pp 5pp	3	0.23						
Sum	**61**	**4.62%**		**772**	**58.53%**		**486**	**36.85%**

Interestingly, Muretus uses shorter final words in his epistles than in the orations; the difference between the two is illustrated in Table 8.13. In his letters, Muretus is half as likely than in his orations to end a sentence with a word of more than four syllables. He is also more likely to end a sentence in a monosyllable or disyllable in his letters.

Table 8.13: Comparison of Final Word Lengths between Orations and Epistles

Length	Orations	Epistles
Long (5–7 syllables)	9.65%	4.62%
Medium (3–4 syllables)	68.00%	58.53%
Short (1–2 syllables)	22.36%	36.86%

The distribution reveals that the same four *cursus* patterns occur more often than expected, as shown in Table 8.14, although to a markedly lesser degree than in the orations.

Table 8.14: Analysis of Distribution of Epistolary Accentual Patterns (*N*=2281)

Pattern	Observed	Expected	χ^2 Test	G-Test
1 4p	41	44.92	0.34	-3.74
p 4p	108	116.68	0.65	-8.35
pp 4p	**78**	**65.40**	**2.43**	**13.74**
1 4pp	17	22.76	1.46	-4.96
p 4pp	**73**	**59.11**	**3.26**	**15.40**
pp 4pp	25	33.13	2.00	-7.04
1 3p	44	43.53	0.01	0.47
p 3p	**134**	**113.09**	**3.87**	**22.74**
pp 3p	42	63.38	7.21	-17.28
1 3pp	35	41.55	1.03	-6.01
p 3pp	97	107.95	1.11	-10.37
pp 3pp	**78**	**60.50**	**5.06**	**19.82**
Others	547	547.00	0.00	0.00
Sum	**1319**	**1319**	**X^2=28.42**	**G_{adj}=28.72**

$X^2 = 28.42 > \chi^2_{0.001[5]} = 20.52$ $G_{adj} = 28.72 > \chi^2_{0.001[5]} = 20.52$ certainty ≈ 99.997%

From the data, it is clear that accentual rhythm exists in Muretus' epistles just as it does in the orations, but to a much less noticeable extent: the preferred *cursus* forms make up not even thirty percent of the epistolary corpus. The forms that occur more often than expected are presented in Table 8.15, along with their proportion to the whole of the epistolary data.

Table 8.15: Preferred *Cursus* in Muretus' Epistles

Pattern	Frequency	Proportion	Type
p 3p	134	10.16%	*Planus*
pp 4p	78	5.91%	*Velox*
pp 3pp	78	5.91%	*Tardus*
p 4pp	73	5.53%	*Tardus*
Sum	363	27.52%	

Cursus Planus (p 3p)

The low frequencies of this subset of the data make analysis tentative: more clausulae were dropped for not having clear metrical data than occur in any single pattern under this form of *cursus*. That certain metrical patterns occur especially frequently is obvious, however, even from a casual glance at the distribution of these clausulae, illustrated in Table 8.16.

Table 8.16: *Cursus Planus* in the Epistles (*N*=300; dropped 25 clausulae)

ID	Pattern	Observed	Percent (%)
17	⏑ | ⏑ ⏑ | ⏑ – ⏓	0	0.00
18	– | ⏑ ⏑ | ⏑ – ⏓	1	0.92
19	⏑ – ⏑ | ⏑ – ⏓	1	0.92
20	– – ⏑ | ⏑ – ⏓	1	0.92
21	⏑ | ⏑ – | ⏑ – ⏓	0	0.00
22	– | ⏑ – | ⏑ – ⏓	9	8.26
23	**⏑ – – | ⏑ – ⏓**	**14**	**12.84**
24	**– – – | ⏑ – ⏓**	**24**	**22.02**
25	⏑ | ⏑ ⏑ | – – ⏓	1	0.92
26	– | ⏑ ⏑ | – – ⏓	3	2.75
27	**⏑ – ⏑ | – – ⏓**	**21**	**19.27**
28	**– – ⏑ | – – ⏓**	**20**	**18.35**
29	⏑ | ⏑ – | – – ⏓	0	0.00
30	– | ⏑ – | – – ⏓	2	1.83
31	⏑ – – | – – ⏓	5	4.59
32	– – – | – – ⏓	7	6.42
Sum		**109**	**100%**

As in the orations, we can regroup the *cursus planus* of the letters to provide a better basis for analysis by collapsing all forms with a light syllable in the fifth position from final into an "others" category. That the distribution of *p 3p* is not random is demonstrated in Table 8.17.

Table 8.17: Epistolary *Cursus Planus* Regrouped (*N*=109; dropped 25, grouped 16)

ID	Pattern	Observed	Expected	χ^2 Test	G Test
19	⏑ – ⏑ | ⏑ – ⏒	1	7.24	5.38	-1.98
20	– – ⏑ | ⏑ – ⏒	1	11.55	9.63	-2.45
23	**⏑ – – | ⏑ – ⏒**	**14**	**9.20**	**2.51**	**5.88**
24	**– – – | ⏑ – ⏒**	**24**	**14.67**	**5.93**	**11.81**
27	**⏑ – ⏑ | – – ⏒**	**21**	**8.54**	**18.17**	**18.89**
28	**– – ⏑ | – – ⏒**	**20**	**13.63**	**2.98**	**7.67**
31	⏑ – – | – – ⏒	5	10.86	3.16	-3.88
32	– – – | – – ⏒	7	17.32	6.15	-6.34
Others		16	16.00	0.00	0.00
Sum		**109**	**109.00**	**X^2=53.90**	**G_{adj}=57.80**

$X^2 = 53.90 > \chi^2_{0.001[5]} = 20.52$ $G_{adj} = 57.80 > \chi^2_{0.001[5]} = 20.52$ certainty > 99.999%

The four metrical patterns, 23, 24, 27 and 28, preferred within the *cursus planus* clausulae, together make up 72.5% of the *cursus planus*, and all four are metrically preferred within the epistles as a whole.

Cursus Velox (pp 4p)

Unfortunately, the frequencies of the metrical patterns making up the *cursus velox* in the epistles are too low to give statistical analysis much certainty at a clausular length that would be revealing; it is possible to regroup the data to examine only the final four syllables, that is, the final word, but that scale would not be satisfactorily meaningful. Instead, we here give the distribution of *velox* clausulae in Table 8.18.

Of these clausulae, 21, 23 and 27 are known to be preferred metrically in the epistles; the metrically preferred clausulae 21, 23 and 27, however, account for over 68% of the *cursus velox*.

Table 8.18: *Cursus Velox* in the Epistles (*N*=76; dropped 2 clausulae)

ID	Pattern	Observed	Percent (%)
17	⏑ ⏑ | ⏑ ⏑ – ⏓	6	7.89
19	⏑ – | ⏑ ⏑ – ⏓	3	3.95
21	⏑ ⏑ | – ⏑ – ⏓	11	14.47
23	⏑ – | – ⏑ – ⏓	31	40.79
25	⏑ ⏑ | ⏑ – – ⏓	1	1.32
27	⏑ – | ⏑ – – ⏓	10	13.16
29	⏑ ⏑ | – – – ⏓	2	2.63
31	⏑ – | – – – ⏓	12	15.79
Sum		**76**	**100%**

Cursus Tardus

Both versions of the *cursus tardus, p 4pp* and *pp 3pp*, like the *cursus velox*, suffer from very low frequencies that make meaningful statistical analysis difficult. In the *p 4pp* variant, nine clausulae were dropped, more than any pattern except 14, as demonstrated in Table 8.19. Only pattern 20 stands out at first glance, but it only explains 31% of the *cursus*. No combination of metrically preferred clausulae will explain the majority of this variant on *cursus tardus*. Pattern 20 is, however, significantly more frequently observed within this *cursus* pattern than would be expected from a random distribution of syllables, but this can only be given with a 95% level of confidence. Thus pattern 20 is, within the clausulae of this *cursus* for which metrical rhythm can be ascertained, an important element. Along with pattern 15, it explains over 37% of the *cursus*.

Table 8.19: *Cursus Tardus (p 4pp)* in the Epistles (*N*=64; dropped 9 clausulae)

ID	Pattern	Observed	Percent (%)
1	⏑ ⏑ | ⏑ ⏑ ⏑ ⏓	0	0.00
2	– ⏑ | ⏑ ⏑ ⏑ ⏓	1	1.56
3	⏑ – | ⏑ ⏑ ⏑ ⏓	1	1.56
4	– – | ⏑ ⏑ ⏑ ⏓	3	4.69
5	⏑ ⏑ | – ⏑ ⏑ ⏓	1	1.56
6	– ⏑ | – ⏑ ⏑ ⏓	8	12.50
7	⏑ – | – ⏑ ⏑ ⏓	1	1.56
8	– – | – ⏑ ⏑ ⏓	8	12.50
9	⏑ ⏑ | ⏑ – ⏑ ⏓	0	0.00
10	– ⏑ | ⏑ – ⏑ ⏓	0	0.00
11	⏑ – | ⏑ – ⏑ ⏓	3	4.69
12	– – | ⏑ – ⏑ ⏓	6	9.38
13	⏑ ⏑ | – – ⏑ ⏓	0	0.00
14	**– ⏑ | – – ⏑ ⏓**	**20**	**31.25**
15	**⏑ – | – – ⏑ ⏓**	**4**	**6.25**
16	– – | – – ⏑ ⏓	8	12.50
Sum		**64**	**100%**

Table 8.20: Epistolary *Cursus Planus* Regrouped (*N*=109; dropped 25, grouped 16)

ID	Pattern	Observed	Expected	χ^2 Test	G Test
14	– ⏑ | – – ⏑ ⏓	20	12.67	4.24	9.13
Others		44	51.33	1.05	-6.78
Sum		**64**	**64.00**	**X^2=5.29**	**G_{adj}=4.67**

$X^2 = 5.29 > \chi^2_{0.025[1]} = 5.02$ $G_{adj} = 4.67 > \chi^2_{0.05[1]} = 3.84$ certainty > 96.93%

The *pp 3pp cursus* rests on a bit firmer ground: only 4 clausulae are dropped and the *cursus* is spread over fewer metrical categories; the distribution of the patterns is shown in Table 8.21. Pattern 14 alone is metrically preferred, but it only explains 39% of the *cursus*.

Table 8.21: *Cursus Tardus (pp 3pp)* in the Epistles (*N*=74; dropped 4 clausulae)

ID	Pattern	Observed	Percent (%)
1	⏑ ⏑ | ⏑ ⏑ ⏑ ⏓	10	13.51
2	– ⏑ | ⏑ ⏑ ⏑ ⏓	5	6.76
5	⏑ ⏑ | – ⏑ ⏑ ⏓	3	4.05
6	– ⏑ | – ⏑ ⏑ ⏓	7	9.46
9	⏑ ⏑ | ⏑ – ⏑ ⏓	2	2.70
10	– ⏑ | ⏑ – ⏑ ⏓	3	4.05
13	⏑ ⏑ | – – ⏑ ⏓	15	20.27
14	**– ⏑ | – – ⏑ ⏓**	**29**	**39.19**
Sum		**74**	**100%**

Conclusions on Epistolary Cursus

Taking into account all the metrical patterns considered demonstrated to be preferred in Table 5.4, the theory that metrical clausulae explain accentual rhythms appears to be supported by two of the *cursus* forms, *planus* and *velox*, but not the *cursus tardus*. The analysis is fraught with difficulties, however, given the low frequencies involved. A comparison of the proportions of each *cursus* type explicable by each metrical pattern is given in Table 8.22, restating the data given above in a comparative format.

Table 8.22: Summary of Major Intersections of Meter and Accent

ID	Pattern	*Planus (p3p)*	*Velox (pp 4p)*	*Tardus 4 (p 4pp)*	*Tardus (pp 3pp)*
14	– ⏑ – – ⏑ ⏓			31.25	39.19
15	⏑ – – – ⏑ ⏓			6.25	0.00
18	– ⏑ ⏑ ⏑ – ⏓	0.92			
21	⏑ ⏑ – ⏑ – ⏓	0.00	14.47		
23	⏑ – – ⏑ – ⏓	12.84	40.79		
24	– – – ⏑ – ⏓	22.02			
27	⏑ – ⏑ – – ⏓	19.27	13.16		
28	– – ⏑ – – ⏓	18.35			
Sum		**73.40%**	**68.42%**	**37.50%**	**39.19%**

Comparison of *Cursus* in the Orations and Epistles

As shown earlier in Table 8.13, in which the lengths of final words were compared between the orations and epistles, substantial differences between the prose styles of the two corpora are revealed by detailed statistical analysis.

There is a marked difference in the proportion of each corpus that is accentually rhythmical, as shown in Table 8.23. Muretus uses metrical rhythms that produce *velox* and *planus* accentual rhythms more often in the orations than in the epistles; on the other hand, the *cursus tardus* appears more often in the epistles.

Table 8.23: Comparison of Proportion of *Cursus*

Corpus	***Velox (pp 4p)***	***Planus (p 3p)***	***Tardus (p 4pp)***	***Tardus (pp 3pp)***	**Sum**
Oratorical	16.40%	14.38%	5.74%	4.03%	**40.55%**
Epistolary	5.91%	10.16%	5.91%	5.91%	**27.89%**

The proportion of accentually rhythmic clausulae that are explicable in terms of metrical patterns known to be preferred within the same corpus is also much higher in the orations, as shown in Table 8.24. The oratorical *cursus* is thus more clearly explicable in metrical terms.

Table 8.24: Comparison of Proportions of *Cursus* Explicable by Metrical Clausulae

Corpus	***Planus (p3p)***	***Velox (pp 4p)***	***Tardus 4 (p 4pp)***	***Tardus (pp 3pp)***	***Overall***
Oratorical	87.00%	65.85%	52.99%	69.41%	**71.77%**
Epistolary	73.40%	68.42%	37.50%	39.19%	**56.97%**

Nevertheless, as shown in the "overall" column of Table 8.24, the majority of observed accentual patterns that appear to be favored in either corpus can be explained as natural byproducts of Muretus' desire to achieve metrical prose rhythm.

CHAPTER NINE: CONCLUSIONS

Marcus Antonius Muretus, as might well be expected of a Ciceronian and Humanist orator, had knowledge of metrical prose rhythm and developed a practice of metrical prose rhythm that strongly resembles Cicero's practice. He employed metrical prose rhythm more vigorously in his orations than in his epistles, but the practice is evident in both.

As an accidental symptom of Muretus' use of Ciceronian metrical prose rhythm and the preponderance of trisyllabic and tetrasyllabic words in sentence-final position, some accentual patterns allied to the preferred metrical clausulae occur more often than might be expected of a purely random distribution of ultimate and penultimate words. This does not seem to indicate that Muretus sought to employ a system of accentual *cursus*, which would run contrary to Humanist attitudes toward *cursus*, regarded as a medieval concept. Instead, it seems, ironically, to be an accidental byproduct of a preference for Ciceronian metrical rhythm.

That Muretus sought to include metrical prose rhythm but did not seek to employ accentual prose rhythm congrues with the commonly held notions that Humanist authors sought to emulate Ciceronian style and to recover classical stylistic elements that had been forgotten or omitted in the "middle ages," also avoiding the styles employed during those "middle ages," a period of time defined by the Humanists themselves as the interval between the eloquence of antiquity and the Renaissance of that same elegance, recovered under the Humanists' own philological efforts. Although the main theoretical and practical thrust of the Humanist reconstruction of eloquence consisted in lexicographical studies, such as the dictionary compiled by the Ciceronian Marius Nizzolius, it did not end

there, as the Humanist recovery of the Ciceronian practice of prose rhythm demonstrates. Recovering the Humanists' practice in such stylistic fields through statistical analysis gives a fuller picture of the Humanist philological program.

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