The Linguistics of Orality

A Psycholinguistic Approach to Private and Public Performance of Classical Attic Prose

Alessandro Vatri
Wolfson College

Thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy in Classical Languages and Literature
at the University of Oxford

Hilary Term, 2013

Preface

In June 2008 Andreas Willi gave me a copy of his *Languages of Aristophanes* and inscribed it "with all best wishes for the future". As I had a first look at the book I came across a couple of sentences which have been coming to mind quite often ever since. Halfway through the first paragraph of the preface one reads: "I enjoyed the privilege of declaring myself a linguist whenever I spoke to a classicist, and a classicist whenever I spoke to a linguist. There is no better way to be considered a 'specialist', to hide one's ignorance, and to obtain much-needed help". This is probably the most accurate description of my experience as a doctoral student, and I cannot think of a better way to start my own preface.

This quotation is but the least of my debts to Andreas Willi. In 2009 I came back to Oxford and started working on this doctoral thesis with his supervision. He guided my first steps into 'grown-up' academia with constant support and encouragement as well as pragmatism and intellectual honesty. His best wishes were indeed most effective: these years have been the best I could hope for.

It is something of a cliché to put 'privileged' and 'Oxford' in the same sentence, but this describes exactly how I feel about my experience at the University. Here I had the opportunity to receive support and feedback from Philomen Probert, my sometime faculty adviser, who has always been extraordinarily helpful, friendly, and available. I have also profited from the advice and criticism of Tobias Reinhardt, who followed and encouraged my work from the very beginning, of Tim Whitmarsh, and of Rosalind Thomas. Moreover, I have been taken good care of by Gregory Hutchinson and Ilya Yakubovich, my college advisers at Exeter and Wolfson respectively. To my current college and the Faculty of Classics I am most grateful for the generous fee waiver scholarship which I was awarded in 2011.

Oxford also gave me the opportunity to present my ideas and partial results at the Comparative Philology and Classics Work in Progress seminars. It would be impossible to list all the participants whose comments I benefited from. I wish to thank particularly Anna Morpurgo Davies, John Penney, Peter Barber, and Luuk

Huitink. Their benevolent straightforwardness definitely helped me remain on the right track. I also wish to thank Aditi Lahiri, with whom I had a long and useful conversation about issues of psycholinguistics.
My debt, however, reaches beyond the dreaming spires. Ineke Sluiter responded to a conference paper where I presented the bulk of the methodology described in this thesis. To her I owe many useful remarks and good ideas. Anke Lüdeling taught me what corpus linguistics can and especially *cannot* do. Amir Zeldes showed me how to use statistics with linguistics in a sound way (I could never thank him enough for his patience). Back in Oxford, Georgios Anastasiades double-checked that my statistics were rightly done. Many competent colleagues (and friends) helped me clarify my less-than-linear thoughts chatting with a cup of tea, a *biertje*, or an *aperitivo*. I wish to thank especially Giuseppe Pezzini, Elizabeth Koier, Annemieke Drummen, Eleonora Sausa, and Giuseppe Celano. I also wish to thank Gregory Crane and the other organizers of the NEH Institute for Advanced Technology in the Digital Humanities "Working with Text in a Digital Age" (Tufts University, 2012): what I learnt there proved truly decisive for the final stages of my research. Austin Yim kindly proofread the final draft of this thesis.

My stay in England would not have been possible without the support of my father and my aunts. This work, however, shall not only be dedicated to my family.

In that very summer of 2008 Luigi Enrico Rossi inscribed an offprint of one of his articles "Ad Alessandro, abile *perspicuizzatore*" (with a neologism of his own). This thesis—and my entire way of thinking about ancient Greek culture—is deeply inspired by his teaching. I am doing my best to live up to his expectations.

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Abbreviations

Names and works of ancient authors are abbreviated as in LSJ = H. G. Liddell, R. Scott, H. S. Jones, R. McKenzie, P. G. W. Clare, and A. A. Thompson, *A Greek–English Lexicon*, 9th ed. with revised supplement (Oxford, 1996). The titles of periodicals are abbreviated as in *L'Année philologique*. The analysis of texts in Chapter 5 has been aided by a digital tool I created for this purpose and is based on the following editions, which are readily available from the *Perseus Digital Library*:

Antiphon	Maidment (Loeb Classical Library, 1941)
Demosthenes	Butcher (Oxford, 1903)
Hyperides	Burtt (Loeb Classical Library, 1962)
Isocrates	Norlin (Loeb Classical Library, 1980)
Lysias	Thalheim (Teubner, 1901)
Plato	Burnet (Oxford, 1903)
Thucydides	Stuart-Jones (Oxford, 1942)

These texts have been collated with more recent editions and commentaries, to which reference is made whenever necessary in the analyses of specific passages. References to other classical texts are based on the standard editions.

All translations are mine, except when otherwise specified, and are only meant to assist the reader through the discussion of the Greek text. As a consequence, they are as literal as possible, to the detriment of any literary pretension.

DK	H. Diels (ed.), rev. W. Kranz, *Die Fragmente der Vorsokratiker*, 6th ed. (Berlin, 1951)
ELL	*Encyclopedia of Language and Linguistics*, 2nd ed. (Elsevier: 2006)
ENS	*Encyclopedia of Neuroscience* (Elsevier: 2008)
FGrHist	F. Jacoby (ed.), *Die Fragmente der griechischen Historiker* (Berlin – Leiden, 1923–9, 1943–58)
FHG	C. Müller, *Fragmenta Historicorum Graecorum* (Paris, 1849–85)

HEAP 1	P. Li, L. H. Tan, E. Bates, and J.–L. O. Tzeng (eds.), *The Handbook of East Asian Psycholinguistics – vol. I: Chinese* (Cambridge, 2006)
HEAP 3	C. Lee, G. B. Simpson, and Y. Kim (eds.), *The Handbook of East Asian Psycholinguistics – vol. III: Korean* (Cambridge, 2009)
IESBS	*International Encyclopedia of the Social & Behavioral Sciences* (Elsevier: 2001)
LM 2	J. H. Byrne and H. L. Roediger III (eds.), *Learning and Memory: a comprehensive reference. Volume 2: Cognitive Psychology of Memory* (Oxford – San Diego, 2008)
OHP	M. G. Gaskell (ed.), *The Oxford Handbook of Psycholinguistics* (Oxford, 2007)
RE	*Real-Encyclopädie der classischen Altertumswissenschaft* (Stuttgart, 1893–)
Senses 2	R. H. Masland and T. Albright (eds.), *The Senses: A Comprehensive Reference. Volume 2: Vision II* (Amsterdam – London, 2008)
SLGA	G. Cambiano, L. Canfora, and D. Lanza (eds.), *Lo Spazio Letterario della Grecia Antica* (Roma, 1992)

1. Introduction

Ever since Parry and Lord, orality has been one of the most explored and debated themes in classical studies. Anthropologists and cultural historians have argued about the impact of the absence or presence of writing on society and culture, and even on the human mind, and they have endeavoured to assess this impact through the development of the Greek culture from the invention of the Greek alphabet to 'bookish' Alexandrian scholarship and beyond. Classicists, on the other hand, have discussed the effects of the unavailability of writing as a medium of composition and transmission on literary production, in order to recognize traces of such effects in the written texts which have survived up to our days. As is well known, this debate started from epic poetry. The text of Homer was scrutinized for signs of composition-in-performance, the improvisational technique observed among South Slavic bards. As anthropological research has revealed, however, the South Slavic paradigm is not the only possible scenario for the composition and transmission of literature in the absence of writing. Moreover, over the last few decades the very distinction between 'literate' and 'oral' societies has been problematized and rediscussed. The idea of mutual exclusivity between literacy and orality has by now turned into a much less romantic, but much more accurate, perspective which takes into account the domains and uses of written and spoken word and which also focuses on the interaction of the oral and written dimensions and their functions in specific social and cultural contexts. Deterministic views, which tended to regard literacy as a powerful monolithic skill capable of deeply informing human cultures, have been challenged by more sophisticated and nuanced outlooks, which distinguish among different *types* of literacy and tend to conceive literacy itself as both a set of skills and an *enabling* factor—a necessary, but not sufficient (nor decisive) condition for certain anthropological changes to take place.

Analogously, and desirably, literary studies have been tackling the question of orality with an ever higher degree of sophistication. To start with, the Homeric 'battlefield' has seen waves of reactions and counter-reactions to the 'oralist' theory and has

been the starting point for the definition of 'oral poetics'.[1] What this means is a question worth asking, as Bakker points out:

> "The question that […] should be at the centre of the study of orality and oral poetry [is] the question of orality itself. What does it mean for a poem or a poetic tradition to be oral? What is oral style? And, finally, the most basic question: what exactly does 'oral' mean?"[2]

In the first place, Bakker remarks that the term 'oral' applies to (a) discourse which is *listened* to—a matter of *medium* (spoken), and *performance*, or (b) discourse which is *conceived* for oral communication:

> "A given discourse may be oral as to its conception, but written as to its medium: it has been written down, but does not display the features that we normally associate with written discourse. Conversely, a discourse, may be written, i.e., literate, as to its conception, and oral ('spoken') as to its medium. This often happens in the oral presentation of academic papers, when the author has not succeeded in hiding the 'writtenness' of the discourse in question."[3]

The beginning of written tradition in a given society—he argues—is normally marked by the *transcription* of orally conceived texts into the written medium. Once this process should set off, chances are that written texts would start appearing without corresponding to a previous spoken text. As far as Homer is concerned, Bakker maintains:

> "Even though the Homeric text as it was first written […] cannot have been an exact transcript of an oral performance, its conception was, and remained, profoundly oral. And the medium of Homeric poetry remained oral, too, for the simple reason that *performance*, and not silent reading, remained the only medium of presentation of Homeric poetry until well in the classical period."[4]

1 See Kelly (2007): 1–4 for a summary.
2 Bakker (1999): 29.
3 Bakker (1999): 30.
4 Bakker (1999): 35–6.

Of course, the predominance of oral performance in classical Greece is not restricted to epic poetry, as we shall see. An emblematic case is that of oratory. The earliest speeches we possess date to the very last decades of the 5th century, but the practice of public speaking is obviously much older. Writing would be readily available as an aid for composition for earlier orators, but we cannot tell for sure if they availed themselves of it; most probably, they did not. As it stands, part of the effort for an Athenian public speaker would be to persuade the audience of the 'oral conception' of his speech. This is strongly recommended by Alcidamas (*De Sophistis*) and later becomes a *topos* of fourth-century 'pragmatic' (especially forensic) oratory. Analogously to epic poetry, the 'orality of oratory' has been studied (in particular by Dorjahn)[5] in terms of composition-in-performance: even orators who prepared their speeches in writing needed to improvise.[6] Gagarin suggested a more sophisticated approach:

> "There are clear differences between oratory written to be read and oratory written to be performed orally and […] these differences are related to oral performance. […] The [sophists] may have used writing to convey their works to a wider audience, but there is little doubt that Gorgias' surviving orations, at least, were intended primarily for oral performance. […] [The speeches of the logographers] were composed in writing for oral performance. In addition, a smaller number were composed in writing primarily for a reading audience (*footnote:* It is possible, of course, that a speech intended primarily for oral performance will also be read or that speeches intended to be read will sometimes be performed orally; but the distinction between primarily oral and primarily written communication still holds)."[7]

The distinction Gagarin draws between oral performance and 'reading' as communicative situations is not particularly accurate, at least with respect to classical Greece, and must be refined (see Chapter 2). He correctly remarks that the

5 See the list of references.

6 Cf. Pl. *Mnx.* 236b, for instance.

7 Gagarin (1999): 164–5.

Greeks were aware that the intended performance affects the style of a speech, and he lists some stylistic features which, in his view, can be ascribed to each mode of communication, written or oral. He maintains that texts composed for oral performance (*conceptually* oral texts, if one wishes) are (or, rather, may be) characterized by the presence of signposts (markers which explicate the structure of the speech to the audience), by ring-composition, by parallelism and paratactic style, by antithesis, by a tendency to preserve linearity in word order (lack of 'abnormal' hyperbata), by short sentences, and by 'Gorgianic' verbal effects. Conversely, 'written' texts are characterized by a penchant for innovation, analysis, and generalization.

On the one hand, an analysis of this kind (which is ultimately based on the definition of the features of 'oral style') is promising, but on the other hand, it is quite tricky and might ultimately be misleading. As Bakker nicely remarks:

> "The very notion of 'oral style' betrays the perspectival bias of the literate classicist. 'Oral style' presupposes 'literate style' in the same way that 'archaic style' presupposes 'classical style', or 'paratactic style' presupposes 'hypotactic style', and so on: the oral nature of this style is of our own making, and defined with respect to literate style in the black-and-white contrast I have already argued against."[8]

However, it is true that the idea of two different *lexeis*, one appropriate to 'reading' and the other appropriate to 'delivering', had already been conceived as early as the 4th century, as we shall see in Chapter 4. Certainly, this idea was a construct, just like the modern one. In general, it is problematic with ancient rhetoric and criticism to determine where description ends and prescription starts. Aristotle's discussion of the two *lexeis* (which begins at *Rh.* 1413b, see 4.1) is not simply a neutral, 'scientific' description of the results of his observation of texts representing each style, as that of an exploratory study in corpus linguistics would be. In my understanding, he does not simply tell what the two styles *are* like, but what they *should be* like. Of course, this *is* based on observation, and as a matter of fact it is possible to find examples of

[8] Bakker (1999): 36.

texts which show some conformity to the *prescriptions* of the rhetoricians (both ancient and modern), as Gagarin did. Texts which 'respected the rules' before the rules were codified are the very basis of the rules themselves. But what about those which did not? And how influential was the codification of such rules—and whose rules? Gorgias'? Andocides'? Isocrates'? Aristotle's?—on the actual literary production? Is the respect or disregard of rhetorical conventions of this kind to be taken as an unequivocal 'sign' of the conceptual orality of a text?

Bakker suggests that, in order for us to reveal the oral conception of language, "we have to ask what it means for language to be spoken".[9] If we tackle the question from the standpoint of linguistics, the answer will prove to be dangerously slippery. In discourse analysis, spoken language was traditionally assumed to be simpler than written language. Brown and Yule, for instance, maintain that spoken language has a less structured syntax, consists of shorter chunks, has fewer passive constructions, and so on.[10] In their view, speaking is characterized by lack of planning, resulting from the constraints of what we would call composition-in-performance. One can see that spoken language is equated to spontaneous language, a claim which is itself pretty questionable.[11] This idea of 'spokenness' has nothing to do either with *medial* orality (*writing* can be spontaneous, even though the result would not be acceptable as a *written text*) or with *conceptual* orality (not all discourse conceived for oral communication *must* be spontaneous). One of the requirements of spoken communication is that listeners should be able to process the linguistic input comfortably in the here-and-now. It is true that written (planned) language, when performed orally, *can* be difficult to follow, but this *need not* be the case. Conversely, it has been shown that spoken language can be as complex, or even more complex, than written language.[12] It would be very simplistic to take 'simplicity', however defined, as a divide between written (planned) and spoken (unplanned) language. In

9 Bakker (1999): 37.

10 Brown-Yule (1983): 14–19.

11 Cf. Lakoff (1982): 241 on the 'planned/unplanned' distinction as a divide between oral and written language: "the relation is not clear as it seems".

12 Beaman (1984).

an influential article, Chafe argued that the difference lies in other parameters; namely, written discourse should be characterized by integration and detachment, whereas spoken discourse should be characterized by fragmentation and involvement.[13] Field and experimental research carried out by Tannen, however, has shown that these 'functional notions' do not define written and spoken language in an unequivocal way.[14] The features suggested by Chafe often showed up in types of texts where they would not be expected. Moreover, they combined in ways which are not predicted by a bipolar model opposing oral to literate discourse.[15] Corpus studies on English have shown that no linguistic variation corresponds to modality in a one-to-one fashion. The linguistic indicators of the features suggested by Chafe do not identify any well-defined group of texts.[16] Spoken and written text can show the same high degree of linguistic variability both within and across the two modes, and there is no such thing as a 'spoken/written dimension' of linguistic variation. The differences between certain types of written texts and certain types of spoken texts are to be ascribed to other factors, such as formality, purpose, or register. In Biber's words, "physical mode is not adequate in itself to account for the relations among registers in a language".[17] This means that drawing a rigorous distinction between oral and written discourse in Greek literary texts, at least from a linguistic point of view, is ultimately a quixotic quest.

As a consequence, this study shall not examine the 'linguistics of orality' as opposed to that of 'literacy', in an attempt to identify the linguistic features which characterize texts that were performed orally as opposed to those which (allegedly) were not. As I remarked above, all classical literary texts, even those which we may consider 'conceptually written', were performed orally, and some of them would have been conceived for oral performance in the first place. Evidently, oral performance is a form of communication (cf. Chapter 2). As such, it takes place in

13 Chafe (1982). Integration refers to the syntactic compactness of an utterance: "maximum effect with fewest words", Tannen (1982a): 2. Rubin (1995): 66–70 also follows Chafe.

14 Tannen (1982a).

15 Chafe-Tannen (1987): 394–6.

16 Biber (1989): 5, 43.

17 Biber (1988): 24–5, Biber (1995): 238.

specific spatio-temporal settings and involves a certain number of participants. With the oral physical channel being a constant, these other 'components' may vary. Their variation identifies different types of performance. The question I tackle in this study is whether or not this variation corresponds to any type of linguistic variation. In other words, I aim to ascertain whether, and how, specific features of oral performance (setting and participants) might determine linguistic variation. This is what I mean by the 'linguistics of orality'.

My starting hypothesis is that an author more or less consciously *optimizes* his text for the type of performance he envisages. A text should be suitable for conveying the author's meaning appropriately in the *specific context* he has conceived it for and presumably, should be convenient for a speaker to perform in that very context. The most typical contexts of oral performance of literature in fifth- and fourth-century Athens—which is the spatio-temporal focus of this study—are described in Chapter 2. Literary genres would normally belong in one or more of those contexts, and the connection between genres and contexts is precisely the subject of Chapter 3. This consists of a survey of the literary genres which circulated in classical Athens and, at the same time, of an attempt to put together a systematic picture of the history and original function of the written texts which have survived to our days. Chapter 4 is the 'core' part of my study: here, I discuss in what respect an author might manage to optimize his text for the *audience*—in particular, for the degree of control which the audience would have over its own access to the text in different settings. In Chapter 5 I test the hypothesis that ancient Attic authors did so optimize their texts, by means of a quantitative linguistic study of a small corpus of texts. In Chapter 6 I explore the idea that an author might also optimize the text *for the speaker*, who might or might not coincide with himself (as was the case with the ancient professional speechwriters). Certain types of performance allowed speakers to read aloud from written texts, whereas others did not. It is worth discussing whether there is any way by which this might inform the texts.

The research question underlying this thesis is quite similar to that of Gagarin's study of Greek oratory. He is very right in remarking that one should focus on oral

performance rather than composition.[18] The distinction Gagarin draws between texts to be 'read' and texts to be performed is a valid one and is indeed related to oral performance, as he maintains. However, it is *internal* to oral performance, if one thinks that Ancient Greek reading was a type of oral performance as well. In my view, these two classes of texts correspond to two types of oral performance. Each of these types was characterized by a specific setting and specific modes of interaction of the participants among themselves and, importantly, with the text, but the physical channel remains the same. Obvious as it may sound, my 'linguistics of orality' are an all-oral matter.

[18] Gagarin (1999): 164.

2. Private and public performance of literature

2.1 Performance of text in classical Athens

Classical Attic literature is a corpus of texts which were composed and started circulating in Athens during the 5th and 4th centuries BC. From a linguistic point of view, this corpus is very diverse, showing a wide array of language varieties. To begin with, two macroscopic text types represented in the corpus are prose and verse. Most of these texts are written in the Attic variety of Classical Greek, but others show a smaller or greater influence of 'foreign' dialects, as is the case with Ionicisms in the *Tetralogies* of Antiphon[1] for instance, or are in a different literary dialect altogether, like the tragic choruses. Different linguistic varieties are detectable even within individual works. In comedy, for example, it is possible to discern many of the sociolinguistic registers that characterize the fifth-century Athenian speech community[2]—that is, the social community that shared the knowledge both of the forms of speech used in Athens and of their patterns of use.[3] Literary texts do not only record, more or less faithfully, real life linguistic communication: since they ultimately consist of 'speech', 'special' as it may be,[4] they are media of communication themselves. Incidentally, all texts can be considered a form of speech regardless of their literariness, which is ultimately a matter of socio-cultural perception and as such is a subjective parameter which can change over time.[5] In the simplest cases, a text is produced by an author for some audience (a specific addressee, a generic audience, the author himself, etc.) which will access the text at some point in time and space. Accessing text (which also includes *composing* text, as we shall see) can be analysed as a speech event, that is, an activity that is "directly

1 Dover (1950).
2 Willi (2003).
3 Hymes (1974): 47–51.
4 Bakker (1999): 37–8.
5 Eagleton (1983). In this study, the literariness of Greek texts is defined on the grounds of the modern concept of Greek literature, leaving aside the questions of what texts would have been regarded as 'literary' in classical Athens, and of what this would mean.

governed by rules or norms for the use of speech".[6] In other words, any activity involving texts implies linguistic communication.

In sociolinguistics, the context in which a speech event occurs can be described as a speech situation. For instance, a conversation (*speech event*) can take place during a party, on a bus, in an office and so on (*speech situations*). The same conceptualization applies to access to texts: accessing a Greek tragedy (speech event) can take place in a classroom, in a theatre, watching television, and so on (speech situations). Every speech event consists of one or more *speech acts*, such as the turns (speech acts) in a conversation (speech event). Every speech act is characterized by a set of features (the so-called 'components') which describe its situational context, its form and content, and its socio-cultural function. Components of speech acts have been variously identified in the linguistic literature. Biber, for instance, counts eight such components, namely 'participant roles and characteristics', 'relations among the participants', 'setting', 'topic', 'purpose', 'social evaluation', 'relations of participants to the text', and 'physical channel'.[7] Hymes lists sixteen instead:[8]

1. message form, and
2. message content;
3. setting: the time, place, and physical circumstances of a speech act;
4. scene: the 'psychological setting' (formal, informal, serious, festive, and so forth);
5. speaker (or sender): the person who produces the speech act;
6. addressor: the source of the speech act (as it were, the author of the text);
7. hearer (or receiver, or audience): the person, or persons, who perceives the speech act;
8. addressee: the person to whom the speech act is directed;
9. purposes-outcomes: what is to be accomplished by means of the speech act, from a communal point of view (for instance, the outcome of a political speech is a decision over a political matter);

6 Hymes (1974): 52.

7 Biber (1988): 28–31.

8 Hymes (1974): 54–62.

10. purposes-goals: what individual participants intend to accomplish by means of the speech act (for instance, the goal of a political speech is that the decision proposed by the speaker should be made);
11. key: the tone of the speech act (serious, ironic, etc.), which need not be verbal;
12. channels: the medium of transmission (oral, written, etc.);
13. forms of speech: the linguistic variety (language, dialect, register, etc.);
14. norms of interaction: what social rules governing speaking the speech act obeys;
15. norms of interpretation: how the speech act is interpreted, given the interactional norms of a specific community;
16. genres: sets of traditionally recognized formal characteristics, which the speech act is supposed to share in.

Some components may change with every speech act within a single speech event. For instance, within the same conversation, different speech acts might have a different key—some might be ironic, others serious. If more than two people are involved in the conversation, the roles of the participants (speaker, addressee, and hearer) can, and probably will, change continuously. The register might change according to the topic, and even the language might. On the other hand, certain components remain the same throughout a speech event. In such a case, we can take them as features of the entire speech event rather than just of the individual speech acts. If we identify the same components in all speech events of the same kind, we can proceed to higher levels of generalization. For instance, we might find that certain components of weather forecasts (speech events) on television (speech situation) are constant. This would allow us to conclude that those components are inherent to television weather forecasts. If we should find minimal sets of features that are sufficient to distinguish a type of speech event from the others, we could build a taxonomy of speech events based on the analysis of the relevant components.

As I mentioned, I regard all activities involving access to text as speech events. This also applies to individual reading. When people read on their own, most components vary, especially those related to the text and the situation. Such is the

case with form and content, setting and scene, genres, and so on. One constant feature, however, is that the addressor is the writer, who need not be present (but might, as when one is reading one's own notes, for instance). The receiver, of course, is the reader, who might or might not be the addressee. The latter case applies, for instance, to epistolography: Cicero's letters are not addressed to us, but as we read them, we become receivers. Determining the channel is not so obvious as it seems. Let us think about written texts that are read aloud. Composing a text for this type of delivery entails two distinct speech events.[9] First of all, the writer is an addressor conveying a message to one or more unknown addressees through the physical channel of writing, which constitutes one speech event. The other speech event is the performance of the written text, with its own participants, its own modality (spoken)—in short, with its own situational context. Here, the sender is the reader of the text, who acts as a "spokesman who repeats the source's words"[10] to a receiver (the audience, whatever its size) that may or may not coincide with the addressee; for instance, the latter would be the case with an invocation or a prayer, with the speaker addressing a deity in front of an audience of hearers, possibly repeating a different addressor's own words. In oral cultures, of course, the addressor's original text will not be recorded in writing, but the same scheme applies unchanged.[11] Now, what about reading aloud to *oneself*, as was most often the case with individual reading in classical Athens?[12] It is tempting to analyse this as a speech event where the sender

9 Cf. Svenbro (1993): 44–8.

10 Hymes (1974): 56.

11 Cf. Bakker (1998): 63 for rhapsodic performances of Homer.

12 Whether ancient reading was predominantly oral or silent is a long-debated problem. Starting from the 1980s, the medievalist Paul Saenger stated that ancient readers were not physiologically able to read silently in the same way as modern Western readers do. This assumption, however, cannot be maintained: from a physiological and cognitive point of view, the Ancients might well have developed silent reading, and the question falls in the domains of cultural history alone (see Appendix 1). As far as the cognitive processes involved in word recognition and lexical access are concerned, there is no distinction between oral and silent reading, that is, the retrieval of meaning from visual input works in the same way. Experimental comprehension scores show no difference between the two manners of reading. Silent reading is simply faster and, as a consequence, more efficient, see McCallum et al. (2004).

and the receiver are the same person.[13] Once again two speech events can be distinguished: that of writing (with the writer as the addressor, a specific or generic addressee, and written text as a channel), and that of reading (the writer is still the addressor, whereas the reader is both the sender and the receiver, and the channel is oral). The same reasoning can be applied to silent reading, as experimental psychology suggests. As a matter of fact, listening and reading share a common auditory basis.[14] In reading, words are recognized both as units of meaning and as graphic signs encoding phonological information (see Appendix 1 for a detailed account of these processes). The phonological information is then recoded in the reader's mind and used for the prosodic representation of sentences, which is concomitant with syntax processing.[15] Phonological recoding may or may not be assisted by sub-vocal activity (that is, the activation of the neurological system involved in planning the motion of the muscles involved in speaking)[16] and the muscular activity in the articulatory organs which are linked to 'inner speech'.[17] When isolated words are recognized, subvocalization does not happen. Even then, however, it is substantial for prosodic representation, once the meaning of the words has been accessed (postlexical stage).[18] In short, since the text is 'performed' to oneself in one's mind, reading silently a Greek tragedy in one's own armchair can be described as a speech event occurring in a speech situation. Reading, as a speech event, is characterized by the coincidence of the sender and the receiver, and by the

13 Just as, for instance, in speaking to oneself "one plays the roles of both S[peaker] and A[dressee] at the same time", Dik, S. C. (1989): 5. Cf. Hymes (1974): 13. Cf. also Thomas (2003): 163–4.

14 Kadota (1987): 196. Cf. Shillcock (2007): 95–6, Frazier et al. (2006): 247. As Romero Lauro et al. (2010) suggest, syntactic comprehension activates the 'phonological loop' component of working memory: spoken language, or printed representations of spoken language (both alphabetic and pictographic), can be stored in short-term memory as phonological representations as long as they are rehearsed sub-vocally, see Gathercole (2008): 34–5. See Hirotani et al. (2006) and Kentner (2012) for a survey of recent studies.

15 Stolterfoht et al. (2007). Cf. 4.2.7.

16 Gathercole (2008): 34–5.

17 Sokolov (1972): 211, Taylor-Taylor (1983): 210–11.

18 Slowiaczek-Clifton (1980). Cf. de Jong et al. (2009), Kadota (1987): 188.

'vocal' channel, by which I mean both fully oral and sub-vocal performance of text. Individual reading is but one of the ways to access literary texts. If we turn back to classical Athens, this was not even common altogether (see Chapter 3). Allusions to this activity are found, for instance, in Plato's *Phaedrus* (see below), possibly in the *Theaetetus* (152a), in the *Phaedo* (98b), in Aristotle's *Problemata* (916b)[19] and in a number of other sources which seem to imply silent reading.[20] In the 5th and 4th centuries BC, Athenian culture started evolving from its oral/aural stage to a more literate one. This is mirrored by changes in the production of literature. Some writers started composing works which had no connections with a specific cultural occasion. In general, literary texts started being published (more or less deliberately) and circulated as written texts. In spite of these innovations, literary texts would still be read aloud in most occasions. In Knox's words, "ancient reading was predominantly reading aloud, performance in fact—before a smaller audience than at the Dionysia or at Olympia but still performance".[21] These performances, of course, can be described as speech events and would mostly occur in typical socio-cultural contexts. A summary list of the principal contexts would include civic/religious festivals, where performances of epic and choral poetry took place, the theatre (by which I mean the socio-cultural context of dramatic performance, not simply the physical space), public ceremonies (such as 'state' funerals), the Assembly and the tribunal (once again, not to be intended as simply the physical spaces), and the symposium. Another typical context we are informed about is that of private collective reading, which is described or alluded to in a number of fourth-century sources.

At the beginning of Plato's *Theaetetus* (142a–3c), Eucleides and Terpsion are taking a rest at the former's house in Megara. Eucleides mentions some notes he took of a conversation which Theaeteus had with Socrates some years before, and Terpsion suggests that they should read them (διελθεῖν). Eucleides agrees and says that the slave will read to them as they rest (ἡμῖν ἅμα ἀναπαυομένοις ὁ παῖς ἀναγνώσεται). He

19 Cf. Allan, D. J. (1980): 244.

20 Gavrilov (1997): 70–1.

21 Knox (1985): 7, Rossi (1992): 94–7.

then hands the book to the slave, who starts reading. In the *Parmenides* (127c–d) Antiphon recalls that one of Zeno's friends, Pythodorus, told him that Parmenides and Zeno once went to the Great Panathenaea. They lodged in a house outside the city walls, and Socrates, among others, went there in order to hear Zeno's writings (ἀκοῦσαι τῶν τοῦ Ζήνωνος γραμμάτων), which Zeno himself read to them (ἀναγιγνώσκειν οὖν αὐτοῖς τὸν Ζήνωνα αὐτόν). Interestingly, we are told that after hearing them, Socrates asked Zeno to read one of his theses again and then started a discussion.[22] The opening scene of the *Phaedrus* is also a valuable source. At the very beginning, Phaedrus tells Socrates that he went to see Lysias at Epicrates' house. There, the conversation was prompted by a speech of Lysias on love. We are not told whether Lysias read the speech aloud or recited it. A written copy, however, was there, as Socrates guesses that Phaedrus borrowed it and ended up memorizing the speech. He also guesses that Phaedrus often asked Lysias to repeat the speech to him, and that Lysias would do so willingly (227a–8b). This matches the norms of interaction that we can infer from the episode described in the *Parmenides*. Further on in the dialogue, Socrates realizes that Phaedrus has a written copy of the speech on him. Socrates asks Phaedrus to read it for him. They look for a place to sit—they are in the countryside near the Ilissus—and when they spot one, Socrates lies down, and Phaedrus starts reading (230e). Another reference to collective reading is found in Xenophon's *Memorabilia* (1.6.14), where Socrates tells Antiphon that he goes through (διέρχομαι) the treasures of the wise men of the past, which they committed to books, together with his friends. Outside the Socratic environment, Isocrates (12.233) says that he tested his speech on his former disciples in a collective reading —it is not specified who the reader was (ἀνέγνωστο δ' ὁ λόγος)—and received enthusiastic feedback.[23]

The speech events described in these passages have some features in common. The

[22] Similarly, in the *Phaedo* (97c–d), Socrates tells about hearing a reading of a book of Anaxagoras, without giving a detailed account of the situation—at least, not explicitly, cf. Allan, D. J. (1980): 249.

[23] Hellenistic sources are listed in Allan, D. J. (1980): 248 and Schenkeveld (1992). See also Hutchinson (2008): 38–9.

channel is always oral. The addressor is always a writer, who may or may not coincide with the sender. The sender, in turn, can be the writer himself (like Zeno), an *ad hoc* reader (like Phaedrus), or a slave.[24] The receiver could be one single hearer, or a small group of people. As to the norms of interaction, they allowed the receivers to interrupt the sender, to ask him to repeat, and to start a discussion with him.[25] These conditions are analogous to those of individual reading. As Pugh observes, "[the reader] is not […] directed exclusively by the author; he is able rather to decide for himself, in the light of his purposes and priorities, how to treat what an author has to offer",[26] and he can process the text at his own speed.[27] The same does not really apply to other speech events, which were set in public contexts. Let us think about drama, for instance: with both tragedy and comedy, the audience would be deeply involved[28] and would be able to provide some immediate (emotional) feedback. However, all interaction with the audience was codified and ultimately cued by the script. If comedy could somehow 'flirt' with the audience, "the conventions of tragedy forbid it to take explicit notice of the audience's presence at all", as Sommerstein put it.[29] The access to the text was not under the audience's control. From this point of view, major performances of epideictic speeches, such as those held at festivals or at civic ceremonies, form a very similar category. Public *epideixeis* would certainly elicit some feedback,[30] but the access to the text would be completely under the speaker's control. Apparently, this could apply to some private *epideixeis* as well,[31] such as those given by the sophists—Protagoras, as Plato describes him, was much more comfortable speaking at length rather than being interrupted and involved into question and answer (*Prt.* 329b, 334c–5c). I will call this type of interaction 'passive feedback'. The case was quite different with the

24 Perhaps not yet a specialized *anagnostes*, Allan, D. J. (1980): 247–8.

25 Cf. Morrison (2004): 112–13, Usener (2003): 21–2.

26 Pugh (1975): 112.

27 Slings (1997): 169.

28 See Ruffell (2008) for a detailed study of dramatic communication in classical Athens. Cf. Thomas (2003): 191.

29 Sommerstein (1997): 65.

30 Isoc. 12.233.

31 On these see Thomas (2000): 249–57.

audiences of 'pragmatic' speeches, those delivered before the Assembly or the tribunal, where crowds could and would react noisily to what the speaker said, and could force him to adapt his strategy to the circumstances;[32] as we shall see (at 3.3.8 and 6.1), orators needed to be able to improvise. This type of feedback was more 'active', in that it had an influence on the text; whether this would leave traces in the *written* version of a speech (such as those which we can read today) is a different problem which we shall examine later on. Ultimately, however, the orator would still be well in control of how the audience would receive the text.

2.2 Linguistic variation across modes of performance

In his study of registers in contemporary English, Biber has identified the 'interactiveness' of speech situations as a parameter related to the frequency of certain linguistic phenomena. The degree of interactiveness of a situation is given by the extent to which the participants can respond directly to one another, provide feedback and opinions, add or amend information, or request clarifications. In English, highly interactive situations correspond to texts characterized by the frequency of first and second person pronouns and short words, as well as by a limited vocabulary.[33] This is clearly not the kind of interaction that took place during the delivery of a pragmatic speech in classical Athens. However, this is exactly the kind of interaction that was *induced* by texts upon performance in private contexts. As we have seen, collective reading is the starting point for discussions in Platonic dialogues, probably the best representation of conversational (therefore interactive, in Biber's terms) Attic we posses, together with comedy; Slings effectively called the language of these genres 'quasi-spoken Attic'.[34] The 'interactiveness' we can attach to texts performed in private speech situations is of a different type (or a different level) than Biber's. As a matter of fact, in a famous passage of the *Phaedrus*, Plato complains that written texts *do not* interact, as their "failure of clarification" and

[32] Thomas (2011), cf. Worthington (1991): 63.
[33] Biber (1988): 40, 57, 130. Biber (1995): 141–5.
[34] Slings (1992), Slings (1997).

"failure of adaptability" show.[35] Now, it is reasonable to argue that the Athenian writers possessed some 'rhetorical knowledge' of the audience and the type of performance they were writing for.[36] For instance, Thucydides' famous definition of his work as a κτῆμα ἐς αἰεί rather than as an ἀγώνισμα ἐς τὸ παραχρῆμα ἀκούειν (Th. 1.22.4), however it is to be interpreted (see 3.3.6), points precisely to this. Aristotle considers the hearer (πρὸς ὅν) one of the three components of speech, alongside the speaker and the topic (*Rh.* 1358a 37–b 2): his distinction among rhetorical genres is based precisely on the intended audience of a speech. As a consequence, it would not be surprising to detect more or less consciously planned differences between texts meant for private reading and texts meant for public performance.[37] Such differences should not be ascribable to other factors, such as genre or style,[38] but should be ultimately connected to the intended *mode of performance*, by which I mean the type of speech situation (private or public) corresponding to the performance of literature. In particular, they should be related to the higher control on text access which the public mode of performance granted to the audience. Before turning to discussing what such linguistic differences may be, I shall briefly describe the connection between literary genres and modes of performance in classical Athens, and what the origin and functions of the written texts we possess were in that context.

35 Kahn (1996): 377.

36 Cf. Gagarin (1997): 34–5. The 'rhetorical knowledge' of a writer "concerns an understanding of the audience of a text. The writer adopts different styles and assumes different tones to achieve various rhetorical effects with various audiences. […] Rhetorical knowledge […] is vital to a writer's ability", Kellogg (1994): 76–7.

37 van der Eijk (1997): 85. As I hope to have shown with this discussion, it would not be correct to phrase this distinction as one between texts to be heard and texts to be read, as other scholars—e.g. Yaginuma (1995)—have done in the past.

38 Rossi (1983): 10.

In the table below, I sketch a summary and very simplified description of the components of the typical speech situations I have outlined in this chapter. Form and content are omitted, as they are specific to each speech act. The identification of such components as the outcomes, goals and norms of interpretation is highly debatable in many cases (in particular for theatrical and sympotic performances), and has given rise to an enormous amount of literature. I have left blank all such components, as well as those which would vary with every text performed in a given type of speech situation.

	Festival	**Theatre**	**Public ceremony**
3. setting	sanctuary	theatre	open air[39]
4. scene	ceremonial, leisurely	ceremonial, leisurely[40]	ceremonial
5. addressor	poet	playwright	speaker
6. sender	rhapsode/chorus	actors, chorus	speaker
7. receiver	large audience	large audience	large audience
8. addressee			citizens
9. outcomes			
10. goals			
11. key			solemn
12. channels	oral (with music and dance)	oral (with music and dance)	oral
13. forms of speech	verse (multiple dialects)	verse (multiple dialects)	prose (Attic, Ionic)
14. norms of interaction	'passive' feedback	'passive' feedback	'passive' feedback
16. genres	epic and choral poetry	tragedy, comedy, satyr play	epideictic oratory

[39] Cf. Th. 2.34.

[40] This is widely debated, see, for instance Taplin (2002), Goldhill (1997).

	Assembly, Tribunal	Symposium	Collective reading	Individual reading
3. setting	Pnyx, Areopagus	private houses	private	private
4. scene	formal		leisurely	leisurely
5. addressor	logographer/speaker	poet	writer	writer
6. sender	speaker	singer	reader	reader
7. receiver	large audience (Assembly: about 6000 people; Tribunal: 201 to 401 jurors in private suits, 501 in public prosecutions, up to 1501 for important political suits,[41] plus numerous[42] spectators)	small group	one person, or small group	reader
8. addressee	Assembly, jurors			
9. outcomes	making decisions			
10. goals	influencing decisions			
11. key				
12. channels	oral	oral (with music and dance)	oral	'vocal'
13. forms of speech	prose (Attic)	verse (multiple dialects)		
14. norms of interaction	'active' feedback	'conversational'	'conversational'	'conversational'
16. genres	political and forensic oratory	monodic melic poetry		

41 Hansen (1991): 130, 389.

42 Lanni (1997), Mirhady-Schwarz (2011).

3. Literary communication in classical Athens

3.1 Introduction

In the previous chapter I outlined a classification of the most typical speech situations corresponding to the performance of literature in fifth- and fourth-century Athens. Such situations can be classified as instances of a private or a public mode of performance. I have laid out the hypothesis that some features of the linguistic form of texts might be determined by the envisaged mode of performance. Now, the extant classical Attic literature only consists of written texts. At the time they were written down and started circulating, such texts would presumably be used in either of the following ways:[1]

— As *transcripts.* Transcripts can be defined as oral texts that are only written down to record or potentially achieve oral performance. When the text is performed, transcripts tend to disappear from the visual scene.[2] A useful comparison can be drawn between transcripts and music scores. Musicians might read from a score or play by heart: the written codification of music might be functional, but is not substantial to performance (and certainly cannot replace it).[3] Reading transcripts while performing them for someone else "does not count as a speech-act":[4] in the related speech situation, the reader is not the receiver, but the sender.

— As *scripts*. Scripts are defined as *written* texts that are performed by *reading* and do not *require* (but can *admit*) oral performance. The reader is both the sender and the receiver (see 2.1).

These two categories are related to the *readers'* approach to a written text. A text that is used as a transcript by one reader can be used as a script by another. Such attitudes can coexist in the same reader at the same time: an actor using a written

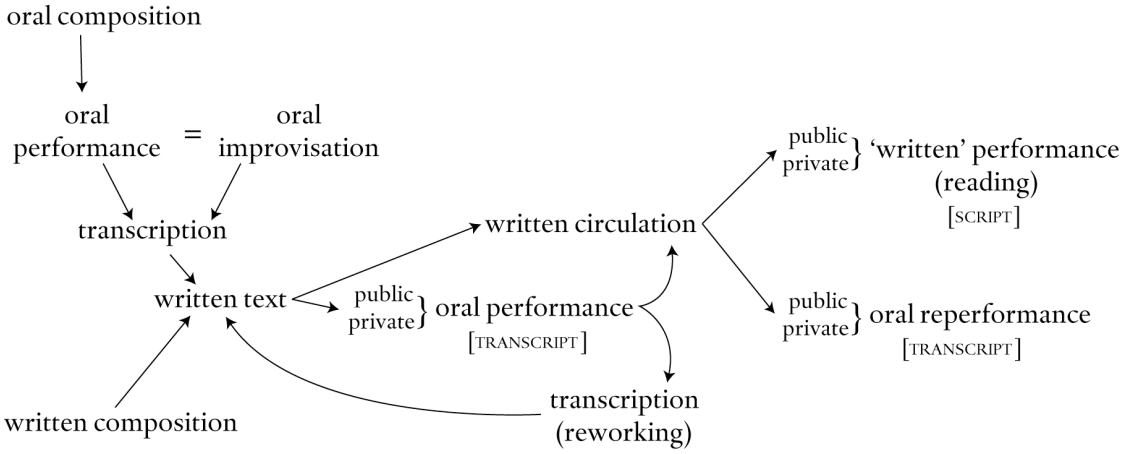
1 This categorization is based on Nagy (1992): 41–5, cf. Nagy (1998): 79.

2 Schloemann (2002): 133–4.

3 Cf. Finnegan (1988): 128.

4 Nagy (1992): 42.

text to rehearse can be the receiver—if only partially—of the literary message (in which case he uses the text as a script) while training as a sender (in which case the text would be a transcript). As a consequence, this categorization is quite fluid and depends on the specific socio-cultural contexts in which texts are accessed. Texts that were first written down with the primary function of transcripts can end up being primarily used as scripts in different periods. In the context of ancient Greek culture, the changes in use and mode of performance of literary texts followed different paths (which are in most cases genre-specific), as the diagram below summarizes:



Oral composition may coincide with oral performance. This is the case with improvisation.[5] However, not all oral composition has to take place contextually to performance: as anthropological studies have shown, entirely oral texts can be composed and rehearsed before being performed.[6] Individual reading belongs under private 'written' performance. It might be argued that oral dictation played a role in written composition and/or in the production of copies for written circulation.[7] As a consequence, it might be more accurate to distinguish between 'private' and 'public' composition. The latter would only include oral improvisation, whereas the former would include both written and oral composition, when this should not coincide with performance. Private composition would enjoy a flexibility of the same kind as

5 That is, 'composition-in-performance', see Finnegan (1988): 88–9, 129–31.

6 Finnegan (1988): 91–109.

7 Thomas (1992): 91, cf. Skeat (1956).

private reading.[8] Written texts could either be circulated as such or used as transcripts for public performance and republished in written form. Transcripts can be altered in oral performance which itself can be regarded as another potential oral composition stage. Such improvised materials can creep into the written text, for which a pre-performance and a post-performance stage can be distinguished (of course, we normally expect only one of the two to have survived to our day, but see 5.1 on the history of the text of Demosthenes' *Third Philippic*). Written circulation could take place in different manners and to different extents and is a label that encompasses an ample range of procedures[9] and one that was not always under the writers' control. 'Published' written texts could be used as transcripts for oral reperformance or as scripts for private or public reading.[10] Texts that were used as scripts may or may not have gone through a transcript stage. Texts that were used as transcripts *after* having been published in written form, however, generally *had to* have been used as transcripts before: it would be anachronistic to claim that a fifth-century author primarily published a text as a written transcript since the *raison d'être* of oral texts was the specific occasion in which they were meant to be performed.[11] Cultural changes might lead to the decline of social customs that provided the occasions for performing certain literary genres. At this stage, transcripts belonging to such genres can survive as scripts (or at most as transcripts for 'revival' performances), and it is as such that we still read them. The 'scriptification' of literary works can either have taken place at a very early stage, with or without the consent of the author, or only after the connection between each text and its occasion was lost.[12]

The aim of this chapter is to assign the right place on the diagram to the classical Attic literary works as we have them (that is, as written texts). This task is carried out by surveying the major literary genres that circulated in classical Athens for the

8 Composition is a change in medium anyway (from 'mental' to phonic or graphic, with or without an intermediate phonic stage), cf. Bakker (1998): 59, Thomas (2003): 180.

9 See Van Groningen (1963).

10 Cf. Thomas (2003): 162–71.

11 Cf. Rosen (2006): 27 for drama, but cf. n. 100 below.

12 Rossi (1992): 94–7.

purpose of reconstructing what the *prevailing* use of written texts for each genre was, as well as the possible transitions from the prevalence of one function to that of another. These questions are relatively more straightforward to address for certain literary genres than others, especially in the absence of conclusive evidence in the primary sources. As a consequence, they have given rise to a wealth of secondary literature. Throughout this survey, I shall review the scholarly debate over these *Verschriftlichung* processes and attempt to arrange the information we possess as systematically as possible. In particular, I will address these questions: (a) whether 'scriptification' took place at the same time as (or coincided with) the intended publication of a text, or is due to cultural changes that deprived transcripts of their occasion; (b) as far as transcripts are concerned, to what extent the written text corresponds to the oral text; (c) what mode of performance (private or public) was meant for both scripts and transcripts. Since this study is focused on the approaches to written literary texts in a specific social and cultural environment, it will be useful to describe the function and purposes of writing and literacy in classical Athens, and how they related to literary experience.

3.2 Setting the scene: literacy and literature

By the beginning of the 5th century BC alphabetic writing had been in use in Greece for at least about three centuries already, and it had served all sorts of purposes, both practical and cultural.[13] Of course, literacy developed in different manners and to different extents across the Greek world. As far as classical Athens is concerned, a great wealth of literary, epigraphic, iconographic, and archaeological materials can help modern scholars reconstruct its function and nature. However, as Thomas has pointed out, one must bear in mind that literacy is not a 'monolithic' skill but consists of several sub-skills. Most importantly, setting aside any diatopic and diachronic considerations, proficiency in any such sub-skills varies diastratically. Therefore, when we talk about literacy in classical Athens, we must always specify *whose* literacy we are describing, and what specific sub-skills it involved.

[13] Morgan (1999): 54, n. 26.

Starting from the public sphere, it is well known that the Athenian democracy made extensive use of writing, which was functional to the very working of the city-state.[14] This close connection encouraged a view in scholarship according to which democracy itself is a product of literacy. This position is based on the 'optimistic' outlook on literacy developed and popularized by such cultural historians and anthropologists as Havelock, Ong, and Goody, and which is ultimately related to McLuhan's technological determinism.[15] Scholars who subscribe to this point of view consider literacy as *the* factor that causes abstract and rational thought to rise and develop, as the case of sixth-century Greece should prove. When literacy meets political and legal life, no other outcome can be expected but democracy. It is not worth providing yet another detailed summary of this widely debated question here.[16] To sum things up, the 'optimistic' view has not stood up to anthropological field research. Several studies have proved that literacy, like all technologies, is simply an 'enabling factor'.[17] That is, learning how to write and read is not sufficient to foster cultural and mental development in individuals.[18] Instead, this role is played by education and schooling, and the effects of literacy vary according to its function in society. Obviously, the same neutral outlook must be extended to writing. Writing is not necessarily a synonym for rational thought, objectiveness, and accessibility of knowledge and information. Quite on the contrary, it is often associated with the irrational (magic) and with despotic rule, being a way to mark possession: sizeable unpublished archives and inventories are typical of palatial states and oriental monarchies, and even such oriental inventions as maps and coinage can be interpreted as expressions of the monarchs' control over land and trade.[19]

14 Steiner (1994): 234.

15 Finnegan (1988): 8, Thomas (1992): 21–2.

16 Cf. Thomas (1989): 22–7, Steiner (1994): 5, Yunis (2003a): 8–10, Morrison (2004): 110–15, Pébarthe (2006): 22–30.

17 Finnegan (1988): 38

18 Most notably Scribner-Cole (1981). For a review of such studies, Rubin (1995): 310–14.

19 Thomas (1992): 27, Steiner (1994): 5–8, 126–42, 147–85, 228, 241, cf. Musti (1986): 21–5. As Steiner (p. 7) remarks, "despotic oriental kings […] use written communications to replace oral encounters with their people", cf. for instance Hdt. 1.99–100: κόσμον τόνδε Δηιόκης πρῶτός ἐστι ὁ καταστησάμενος, μήτε ἐσιέναι παρὰ βασιλέα

Democracy is not due to writing, but exploits the possibilities it opens and implicitly promotes it.[20] According to Musti, the distinctive features of democratic writing are its lack of secrecy (as is the case with epigraphic tribute lists, for instance), the clarity of the graphic layout and even the choice of materials (stone as opposed to bronze, which is less suitable to sizeable public inscriptions). Democratic Athens pursued and exported a precise and distinctive 'graphic programme'.[21]

Even though it is true that public, epigraphic writing was extensively developed in classical Athens, it does not follow that a proportional share of the population was able to read: abundance of written record does not necessarily indicate abundance of literates.[22] More significant evidence can be gathered from a glance at Athenian education and by investigating whether and to what extent literacy—and what type of literacy—was a necessary skill for every citizen for both practical and cultural purposes.

Between the 5th and 4th centuries schooling in Athens was customary, if not compulsory.[23] Education had to be paid for, and most families could not afford to send their sons to schools for more than three years.[24] Up to the late 5th century, education consisted of gymnastics and *mousike.* It is uncertain whether *mousike*

μηδένα, δι' ἀγγέλων δὲ πάντα χρᾶσθαι, ὁρᾶσθαί τε βασιλέα ὑπὸ μηδενός […] Καὶ τάς τε δίκας γράφοντες ἔσω παρ' ἐκεῖνον ἐσπέμπεσκον, καὶ ἐκεῖνος διακρίνων τὰς ἐσφερομένας ἐκπέμπεσκε.

20 Morgan (1999): 53–4.

21 Musti (1986), cf. Thomas (1992): 138–40. Cf. Gehrke (1998): 52 on the role of writing in establishing social identity. Whether or not 'democratically written' texts had an actual 'democratic' application is a different question, see Thomas (1995). According to Musti (p. 34), a huge inscription such as the law code of Gortyn is the product of a 'constitutional' aristocratic government. As has been pointed out by Whitley (1997), this inscription had a monumental, symbolic character and was not probably meant to be read by the average Gortynian, while still encoding *real* laws, cf. Gagarin (2003): 70–2. The correspondence between clear and visible writing and democracy is not symmetric.

22 Nieddu (1982): 237, cf. Thomas (1989): 17.

23 See Schmitter (1975). The Solonic law on education was a strong incentive for parents to provide their children with the "skills necessary for living" (p. 289), which need not mean schooling. Cf. Pébarthe (2006): 44–6. Education (we shall not examine here whether it involved literacy or not) was public and compulsory in Sparta (cf. Arist. *Pol.* 1294b 22–4), Millender (2001): 145.

24 Beck (1964): 81, Webster (1973): 60.

included or required literacy at all, if only instrumentally. It is likely that 'musical' disciplines (poetry, singing, playing, and dancing) could be taught entirely orally. A third division of education, *grammata*, started emerging in the second half of the 5th century and established itself fully in the early 4th century. *Grammata* certainly implied basic literacy, but seem to be oriented to literature rather than to its practical uses. In this respect, the boundaries between *grammata* and *mousike* seem quite blurry.[25] The perception of *mousike* as a 'luxury', a type of education with no practical purpose and reserved to elite children,[26] can only be assumed after *grammata* gained its independence as a distinct division of education. Since several sources point to differences in education between different social classes,[27] it might be plausible that lower class boys only received some sort of professional training which might have involved basic literacy, considered part of *mousike*.[28]

In general, literacy was desirable but not essential to practical living (including political activity), and ancient sources seem to stress its cultural relevance instead. Literacy, of course, started increasing in the second half of the 5th century, and so did the use of writing for both public and private documents.[29] The number of individuals who would need to access such documents, however, would still be quite restricted. Even though common citizens could be assigned public offices for which written records were used, it does not follow that they were able to read or compile them on their own, since they could ultimately resort to literate secretaries.[30]

A democratic procedure which has often been regarded as evidence for widespread literacy is ostracism.[31] Once again, the mediation of literates was possible, and archaeological evidence seems to support this scenario. Excavations have brought to

25 Morgan (1999): 47–53 (in particular at p. 50, n. 16), 59–60.

26 Cf. Beck (1964): 83–4, Golden (1990): 63, Pritchard (2004): 217.

27 Isoc. 7.45, Ar. *Ra.* 727–33, *Eq.* 1235–42, *V.* 1210–14, E. *El.* 528, Aeschin. 2.149, see Morgan (1999): 49, Pritchard (2004): 217, n. 45.

28 Ar. *Eq.* 188–9. Cf. Morgan (1999): 49, 54. If such was the case, professional training might fulfil the requirements of the Solonic law on education (n. 23). Cf. Pébarthe (2006): 49–52.

29 Morgan (1999): 53–7, Pébarthe (2006): 82–109, Harris (1989): 29–30, 76.

30 Cf. Nieddu (1982): 242, Pritchard (forthcoming) §4 with further references.

31 Most recently in Missiou (2011), on the problems of which see Jim (2011).

light a number of 'pre-compiled' *ostraka,* 190 of which bear the name of Themistocles and are written by the same hand. Nieddu claims that such *ostraka* were prepared and distributed by political activists, or that they were produced to assist people with practical difficulties or impairments, including the illiterates, whom he regards as a minority.[32] Even if this was the case, writing a name only requires a very basic level of literacy, of the kind described by Youtie for 'slow writers' in Roman Egypt—a society which depended much more on writing.[33]

On the other hand, many inscribed shards dating to the 5th century have been excavated in the *agora.*[34] The texts they bear mostly consist of short sentences (above all, private messages and possession marks), showing a higher level of literacy than that needed to sign one's name or to write another man's on an *ostrakon.* Other pottery presents commercial information (capacity, contents, date) or craftsmen's signatures. Boundary stones are also evidence for private practical use of writing.[35] Such materials reveal the diffusion of basic literacy in lower layers of classical Athenian society.[36] It is questionable whether this level of literacy enabled access to 'bookish' literature—which I shall discuss below—or even to lengthy inscriptions.[37]

As we have seen, inscriptions can be regarded as a visual and tangible representation of both the political system and of the specific juridical "enactment they record".[38] Their large number does not imply that a proportionate percentage of the population could or did read them. The same is true of public and private documents, whose oral dissemination was still fundamental in the 4th century: in politics and law, writing can be considered a complementary technique which does not replace oral methods. Oral re-performance of inscriptions can also be envisaged, both in judicial and political contexts, with ritual public readings being carried out

32 Nieddu (1982): 246–7.

33 Youtie (1971), cf. Pébarthe (2006): 35–6. On ostracism, see Beck (1964): 77, Flory (1980): 19, Pébarthe (2006): 63–6, Thomas (1989): 18, Thomas (1992): 11.

34 Nieddu (1982): 241, Pébarthe (2006): 53–6.

35 Pébarthe (2006): 79–109.

36 Pritchard (forthcoming) §4, cf. Thomas (1989): 31.

37 Flory (1980): 20.

38 Thomas (1989): 64.

by officers such as the *mnemones*.[39]

To sum up, we can estimate that a share of the Athenian population possessed more than basic literacy. This share consisted of the educated elite and of professionals who took advantage of this technology for practical purposes. This would be a specifically urban sector of the population, and literacy remained absent or very weak in the rural demes.[40]

The 5th century also saw the growth of book production and circulation.[41] Early books, like that of Heraclitus, can be considered tangible symbols of their author or their subject, and as such they were often dedicated in temples.[42] It is possible that such texts started to be copied and circulated within restricted circles.[43] A private and spontaneous activity of this kind might have developed into an actual business, involving specialized production and trade.[44] The evidence for this, however, is too scanty to draw a trustworthy picture.[45] Trade, or even simple private circulation, implies a target market of readers. Reading literature requires high level literacy, and book-readers were still considered eccentric, if not elitist and suspicious, in the second half of the 5th century. At any rate, books were rare and precious, and they were mostly used by professional singers as supports for memorization in view of later performance.[46] Otherwise, they were associated with sophistic culture (see

39 Nieddu (1982): 237, Thomas (1989): 17, 35, 61–4, Flory (1980): 20, Longo (1981): 59–60, Thomas (1992): 62, Sickinger (2002). On *mnemones* see Carawan (2008)—cf. Maddoli (1992): 36–7, Thomas (1992): 69–71, and Small (1995b): 159.

40 Jones (2004): 175–81, Harris (1989): 67, 101–2.

41 Morgan (1999): 58–9 with further references, Thomas (2003): 172, Pébarthe (2006): 71–6, Harris (1989): 84–5.

42 Steiner (1994): 87–9, 203, West (1971): 6.

43 Nieddu (1984): 5, 23, Pfeiffer (1968): 29. I shall examine how they relate to performance in the following sections.

44 Webster (1973): 17–19, cf. Rihll (2003): 186–7.

45 Scholars—among others, Nieddu (1984): 248, Csapo-Slater (1995): 2 and Morgan (1999): 59, n. 44—often cite a passage of Xenophon (*An.* 7.5.14) mentioning a ship carrying πολλαὶ βίβλοι γεγραμμέναι. However, βίβλος does not necessarily mean '(literary) book', since it can also denote documents or blank papyrus, Flory (1980): 20, Thomas (1992): 13.

46 Ford (2003): 36, Flory (1980): 21–2, Thomas (1992): 8–9.

below)—not to mention their centrality to an anti-politic cult like Orphism—and were the safest means of circulating minority opinions.[47] No source clearly mentions the fact that they were used in teaching—not even by the sophists.[48] On the other hand, a remarkable number of vases (the earliest date to the Persian wars) portray reading and school scenes which involve rolls and writing tools.[49] Teachers used Homer and, starting from later in the 5th century, selections of non-lyric poets and prose writings for reading practice and memorization.[50] The questions remain open whether each student owned his own copy.

Going back to the pictorial representations of books, it is often the case that a few words are painted on or around the roll. When decipherable, such texts often consist of poetic (mostly hexametric) phrases, which are sometimes loosely connected and nonsensical, and therefore merely decorative.[51] When adults are portrayed on such vases, it is probable that they are would-be performers only using the roll to learn and rehearse a text. In order to appear on vases, school and reading scenes must not have been an unusual sight in fifth-century Athens. However, vases picturing them are relatively rare in comparison with other popular themes, and their quality is generally high, which suggests an elite audience, and ultimately, that such scenes were more familiar (but not necessarily exclusive) to the upper class.[52]

In conclusion, in the 5th century literature was mostly heard. Literary texts were read

47 Thomas (1989): 19–20, 29–33, Thomas (2003): 164, 185–7, Flory (1980): 18–19, Steiner (1994): 193–201, cf. Morgan (1999): 58.

48 Morgan (1999): 60, Thomas (2003): 165.

49 Webster (1972): 244, Webster (1973): 17, Burns (1981): 375–6, Nieddu (1982): 252–61, Ford (2003): 24–30, Morgan (1999): 48, n. 9. Whitehorne (2002): 28 interprets such depictions of books as symbolizing knowledge, rather than writing. On the history of the use of books in ancient (esp. Hellenistic) schools, see Del Corso (2010).

50 Pl. *Lg.* 810b–c, *Prt.* 325e–6a, cf. Ford (2003): 29, Pritchard (forthcoming) §4.

51 Ford (2003): 24–5, Morgan (1999): 56, n. 38. The presence of (almost-)literary fragments on pottery only points to a "reasonably high level of writing dexterity" for craftsmen—see Pritchard (forthcoming) §4—and does not reveal much about their degree of literacy or education. Incidentally, a significant number of potters' names is non-Attic, see Cassio (1981): 84.

52 Flory (1980): 22, Nieddu (1982): 252–61, Morgan (1999): 48, n. 9, Ford (2003): 24, n. 33, Pébarthe (2006): 46–9, Harris (1989): 94.

in schools as reading practice materials (which does not substitute for performance), or by professionals or keen individuals who used them to rehearse for oral performance.[53] As we shall see, public lecturing from books was not uncommon, but it was an exogenous practice. Solitary reading and book collecting were eccentric activities, but quite remarkably, in the late 5th century private performances of written texts began to take place in private houses of the Athenian elite.[54] By the turn of the 4th century cultural and technical book reading was better established in wider sectors of the population. Book-based self-education began spreading and, unsurprisingly, started to be criticized by those members of the 'intellectual elite' to whom cultural reading was previously exclusive.[55]

3.3 Performing literature

3.3.1 Epic poetry

In the 5th century, Athenians were generally well acquainted with epic poetry. Recitations of Homer (a label that would also include other cyclic material)[56] were already regulated by Solon[57] and, as is well known, institutionalized by the Peisistratids.[58] Rhapsodic contests were part of festivals such as the Panathenaia and went on through all the 5th century,[59] in spite of the competition from drama[60] and, at least in the first half of the century, from narrative lyric poetry[61] (which Rossi calls 'epic lyric' or 'alternative epic').[62] On the other hand, epic poetry was not a

53 Cf. Thomas (2003): 171.

54 Wallace (1995): 206–7 , Thomas (2003): 172. See 2.1.

55 Thomas (1992): 11, Morgan (1999): 58. Cf. Ford (2003): 30, 36.

56 Huxley (1969): 116.

57 D. L. 1.57, cf. Huxley (1969): 115.

58 Rossi (1983): 16–18, Ford (1999): 232, Webster (1973): 165, Huxley (1969): 115.

59 Rhapsodic performances are attested well into the Hellenistic age, Webster (1973): 165.

60 Huxley (1969): 113, Wallace (1995): 202.

61 In particular that of Simonides, Cingano (2007): 93–4. Such works might have been performed in ways and occasions similar to those of epic poetry (aulodic contests or public recitations—monodic, choral or mixed—as opposed to sympotic performances), see Aloni (2001): 95, 104–5, Boedeker (2001): 133, Kowerski (2005): 113 with more cautious conclusions (pp. 144–5).

62 Rossi (1983). Cf. Obbink (2001): 81.

particularly productive genre in Athens; or at least, local epics developed late, suffered from competition from other genres from the start and soon fell into oblivion.[63]

As we have seen, Homer was taught in schools, both for reading practice and memorization (which, in this case, need not imply reading from a written text), due to its edifying qualities in particular. However, epic poetry was experienced by the vast majority of Athenians in public recitations.[64] The role of written texts in the domain of epic poetry is very limited. The absence of stichometry and punctuation, and the key role played by music in poetic performance, are indicators that "written texts recorded only an element of the total performance"[65] and cannot be considered adequate substitutes for it. Of course, quotations and the use of epic material by literary authors, which was quite extensive in the classical period, do not imply resorting to written copies, especially due to the impracticalities of book rolls for this purpose. At this stage, we can argue that texts of epic poetry (whose circulation should have been quite limited) were functionally transcripts for public performance.[66] Their didactic use as edifying texts might as well have been entirely oral (transcripts for private performance).

3.3.2 Monodic poetry

Monodic poetry (which includes melic genres, elegy and iambos)[67] mostly belonged to private parties—in particular, to the aristocratic symposium.[68] An exception is represented by narrative elegies, which, as we have seen, were almost certainly performed (also and primarily) at public festivals.[69] 'Old songs', as Webster calls

63 On the alleged *Theseides*, which should date back to the second half of the 6th century, see Cingano (2007) and Neils (1987): 12. Cf. also Huxley (1969): 113–14, 121–2, Webster (1973): 165, Notopoulos (1962): 26, 44, Rossi (1971): 77.

64 Pritchard (forthcoming) §4, Ford (1999): 233.

65 Thomas (1992): 119.

66 Cf. Thomas (1992): 92–3, West (2003): 3, Reynolds-Wilson (1991): 1–2, Csapo-Slater (1995): 2.

67 Budelmann (2009a): 2–3.

68 Carey (2009): 33–4.

69 Aloni (2009): 179, Carey (2009): 23, cf. n. 61 above.

them,[70] still circulated especially in aristocratic settings, as the presence of the Theognidean corpus in the Athenian 'repertoire' reveals.[71] Lyric production from the past was probably learnt in schools (as part of 'advanced' *mousike*, not of 'basic literacy courses')[72] by elite boys[73] and represented the high end of Athenian song. Later in the 5th century, symposia of an aristocratic kind came into fashion in lower layers of the population, and *topoi* of sympotic culture, including songs, seem to have circulated relatively widely by that time, without losing their elite connotation.[74]

Overall, sympotic poetry was still a productive genre in classical Athens. Such production is represented by the monodic fragments of polygraphs like Ion of Chios, Euenus of Paros, Dionysius Chalcus and Critias, and by anonymous *scolia* (drinking songs).[75] Attic *scolia* have traditionally been regarded as a product of sixth- and early fifth-century aristocratic culture.[76] However, it is not necessary to infer such a restricted context for their composition and performance. Aristophanes, for instance, mentions a famous *scolion*, the 'Harmodius song',[77] as a feature of both aristocratic and popular banquets,[78] and according to ancient musical theorist *scolia* were commonly performed at weddings.[79] The manner in which *scolia* were performed (that is, in sequence by individual singers, with the possibility of improvising) is itself paralleled by popular practices of several other cultures.[80]

Pictorial evidence and comic allusions show that lyric poets of the past were quite

70 Webster (1973): 166.

71 Aloni (2009): 175–6. Vases depicting sympotic scenes often contain quotations of well-known lyric verses. Vetta (2000) has identified lines 885–94 of the *Sylloge* as clearly Athenian, since they should refer to the Euboea campaign of 506 (Hdt. 5.77). He also regards the inclusion of Solonian materials in the *Sylloge* as evidence for its circulation (or even its compilation) in an Athenian environment. Echoes of Theognis are also detectable in Plato (cf. *Ly.* 216c and Thgn. 15–18 in particular), see Lane Fox (2000).

72 See n. 50 above.

73 Ford (2003): 25, cf. Swift (2010): 43.

74 Swift (2010): 44–55.

75 Aloni (2009): 176–8, Webster (1973): 167, for the testimonies about Sophocles.

76 See for instance Bowra (1961): 373–97.

77 Ath. 15.50.60.

78 Ar. *V.* 1225 and *Ach.* 980 respectively.

79 *Scholia in Pl. Grg.* 451e 2, Aristox. fr. 125 Wehrli = *Suda*, s. v. σκολιόν.

80 Yatromanolakis (2009): 271–5.

well known in fifth-century Athens. Literary allusions could consist of literal or adapted quotations, echoes of expressions or motives, or mere mentions of works and poets.[81] Vague allusions could be understood by non-elite members of the audience, if we assume that old poets were well known at least as public figures.[82] Understanding textual quotations, on the other hand, requires direct acquaintance with the texts themselves. Above we have ruled out the possibility that non-elite Athenians learnt lyric songs at school or from written texts. It is possible that old songs circulated outside the aristocratic symposium, in a more or less altered form, as *scolia*. As a matter of fact, some *scolia* directly echo passages of 'high' lyric poetry. Interestingly enough, some comic allusions seem to refer to a *scolion* rather than to the original lyric passage that inspired it.[83] Reworking and simplification of prestigious materials into *scolia* can well be considered a plausible consequence of both oral transmission and sympotic improvisation.[84] Such less sophisticated songs could have originated in aristocratic environments and subsequently spread through different layers of the population. Possibly, playwrights also relied on this second-hand knowledge of lyric materials in order to be sure that their allusions were understood by the majority of the audience.

As we have seen, written copies of monodic songs circulated in the 5th century only as 'scores' for rehearsal.[85] Teaching and reperformance do not require the presence of a written text, nor do textual quotations, as we noted with regard to epic poetry.[86]

81 Kugelmeier (1996): 3–4.

82 Swift (2010): 40–2.

83 A striking example is represented by Pindar's fragment 95 (ὦ Πάν, Ἀρκαδίας μεδέων / καὶ σεμνῶν ἀδύτων φύλαξ, κτλ.), which was reworked into a *scolion* (*PMG* 887): ὦ Πὰν Ἀρκαδίας μεδέων κλεεννᾶς / ὀρχηστὰ βρομίαις ὀπαδὲ Νύμφαις / γελάσειας ὦ Πὰν ἐπ' ἐμαῖς / †εὐφροσύναις ταῖσδ' ἀοιδαῖς αοιδε† κεχαρημένος. This *scolion*, in turn, seems to be alluded to by Aristophanes (*Th.* 977–85): Ἑρμῆν τε νόμιον ἄντομαι / καὶ Πᾶνα καὶ Νύμφας φίλας / ἐπιγελάσαι προθύμως / ταῖς ἡμετέραισι / χαρέντα χορείαις. / ἔξαιρε δὴ προθύμως / διπλῆν χάριν χορείας. / παίσωμεν ὦ γυναῖκες οἵἁπερ νόμος, / νηστεύωμεν δὲ πάντως. See Kugelmeier (1996): 44.

84 Kugelmeier (1996): 306–8.

85 Cf. Thomas (1993): 226. Collections of poems, such as Theognis' *sylloge*, were compiled at this stage of transmission, Rossi (1992): 89.

86 Ford (2003): 22–3, 36, *contra* Rossi (1992): 89.

It is only from the 4th century that a public of readers (which entails a disconnection between text and musical performance) can be envisaged. Such readers would mostly be interested in the formal properties of the texts, which, of course, lacked stichometry and musical notation.[87] In general, the extant monodic poetry texts were mainly used as transcripts for private performance in the 5th century.

3.3.3 Choral poetry

In Swift's words, "choral performance permeated every aspect of Greek life, whether private or public, religious or secular".[88] Choral poetry was publicly performed at private ceremonies such as weddings and funerals as well as civic festivals and celebrations. Victory odes are attested in Athens in the first half of the 5th century (both Pindar and Bacchylides were hired by Athenian clients) and, in spite of the decline of this genre in the second half of the century, Euripides wrote one for Alcibiades in 416.[89] Many Athenian citizens took part in choruses—less so, however, when competition came in: as Pritchard has shown, it is likely that dithyrambic[90] and tragic choirs were formed by members of the educated elite.[91] Choral poetry could sometimes be reperformed on a smaller scale, or even monodically, in private situations (symposia).[92] This possibility has been envisaged for Pindar's epinicians in particular.[93] It seems clear, however, that the first performance would be choral. Choral poetry was taught in schools (as part of *mousike*) for memorization. Analogously to monodic poetry, written texts can be regarded as transcripts.[94] However, in this case the envisaged mode of performance would be primarily public.

87 Ford (2003): 18–19, Budelmann (2009a): 8–9

88 Swift (2010): 36.

89 Swift (2010): 39–40, 106–18, Webster (1973): 167–8, Bowra (1960).

90 Dithyrambic competitions started in 509 BC and took place on the first day of the Great Dionysia. Zimmermann (1991): 9–10.

91 Pritchard (2004), cf. Swift (2010): 37–8.

92 Carey (2009): 23.

93 Currie (2004) for a summary of the question. Cf. Rossi (1992): 86–9.

94 Currie (2004): 49–2, cf. Thomas (1992): 119.

3.3.4 Drama

In classical Athens, drama was probably the literary genre that reached the largest audience, if we take into account both the attendance and the frequency of dramatic performances. According to the tradition, the biggest festival where drama was performed—the City (or Great) Dionysia, which were held in Elaphebolion (March/April)—was introduced or reorganized by Peisistratus. Tragic competitions started (or, at least, they were institutionalized) in 534 BC, dithyrambic ones in 509, and comic ones in 486. The City Dionysia hosted 5 comedies and 3 tragic tetralogies every year on a span of 5 days.[95] The attendance is estimated to have been between 14,000 and 17,000 people,[96] and as is well known, was encouraged by the democratic regime by means of the *theorikon*. Drama was also performed at other Attic festivals: comedy was staged at the Lenaea, which took place in Gamelion (January/February), and tragedy was added in 430.[97]

Tragic and comic texts were composed in writing and used as transcripts by professional actors.[98] Especially in the first half of the 5th century, these may have included the authors themselves.[99] Therefore, the original dissemination of dramatic texts was primarily oral. Written texts survived the performance the plays had been composed for.[100] Reperformance of old tragedies at the City Dionysia was officially allowed in 386—a similar law had been voted for Aeschylus alone in 456,[101] whereas comedies started being reperformed in 339. Smaller scale reperformances, however, must have been already customary at such local festivals as the Rural Dionysia[102] or outside Attica, as evidenced by the activity of travelling actors and playwrights

95 Zimmermann (1991): 8–10.

96 Goldhill (1997): 57–8.

97 Zimmermann (1991): 11.

98 Cf. Easterling (1997a): 156.

99 Csapo-Slater (1995): 221.

100 Rosen (2006): 28. Only two fifth-century comedies—the *Sirens* of Nicophon and the *Thouriopersai* of Metagenes (Ath. 6.98), which can be dated to the 420s—seem to have not been produced and to have only circulated in written form (as 'aborted' transcripts?), see Csapo-Slater (1995): 2, Ceccarelli (1996): 112.

101 Zimmermann (1991): 2, 4, 12.

102 Cartledge (1997): 6–8, 24, Easterling (1997a): 156, Csapo-Slater (1995): 3.

across the Greek world. The possibility of reperformance led dramatic poets to revise their plays, a practice which became quite customary,[103] and favoured the dissemination of written copies of the script.[104] It is also possible that tragic recitatives were included in the non-lyric poetry sections of school books and learnt by heart by *grammata* students.[105] However, as is the case with other genres, sizeable written circulation can only be contemplated for the 4th century. As we have noted above, such circulation might or might not have been authorized by the writers, and interpolations were more than common, as shown by Lycurgus' effort to establish an official text of Aeschylus, Sophocles, and Euripides in 330 BC.[106] Parallel to continued use as transcripts for public performance, 'scriptification' can also be envisaged for classical dramatic texts in the 4th century. As Aristotle reports (*Po.* 1461b 8–1462a 12), tragedy could be read, rather than acted, retaining most of its qualities and avoiding the risks of bad and vulgar recitation: the written text had become central to performance.[107]

3.3.5 Ionic prose

Prose, if defined as 'ordinary, non-metrical language', obviously pre-dates its earliest written records. Non-literary uses of written prose (possibly on perishable materials) must have emerged as soon as alphabetic writing was introduced to Greece, and epigraphic prose is well established from the late 7th century onward.[108] However, it does not follow that utilitarian prose books (such as technical treatises) were produced from an early date. As we have seen, writing and literacy played a marginal role even in early schools, and it does not seem plausible that books were used for technical or professional teaching, which was not institutionalized and could be entirely oral.[109]

[103] Csapo-Slater (1995): 2–4.
[104] Sommerstein (1997): 64.
[105] See n. 50 above, cf. Rosen (2006): 31.
[106] Csapo-Slater (1995): 4, Zimmermann (1991): 4.
[107] Knox (1985): 13.
[108] Kahn (2003): 142.
[109] Cf. n. 23 above and Hawke (2003) *contra* Kahn (2003): 149–53.

The earliest non-literary prose books we know about are geographical works. Greek geography is rooted in sea trade and naval warfare. Merchants and sailors would gather empiric information about sea routes, ports, and landmarks. This would give birth to navigation guides that were transmitted orally.[110] In addition, it is likely that merchants were among the first social groups to exploit the technological potential of literacy, and it is not too surprising that oral navigation guides became written *periploi* as early as the 6th century. Such texts were most likely used as scripts. On the other hand, maps did not have much to do with navigation. Early Greek cartography was quite unempirical and developed around the mid-6th century in intellectual milieus.[111] Cartography had long been practised by oriental cultures where it mostly served a symbolic rather than practical purpose,[112] as we have remarked above. Early Greek maps could serve similar purposes. While summarizing in two-dimensional representations the 'unidimensional' contents of lengthy *periploi*, they provided a starting point for speculation about the shape and nature of the world and at the same time opened the possibility to build abstract, geometric models aimed at favouring intellectual mastery of the *kosmos*.[113]

Literary prose also appears in the Ionic world in the middle of the 6th century. According to tradition, the earliest Greek prose writers were Pherecydes of Syros (Cyclades) and Anaximander,[114] the former being a sort of travelling 'holy man' (and, allegedly, the master of Pythagoras),[115] the latter being a well known representative of the emerging Milesian tradition of natural philosophy. Pherecydes' subject matter was theogony, which of course until then had belonged to the domain of hexametric poetry. As we have seen, books can by no means be regarded as primary means of transmission before the turn of the 4th century. The initial dissemination of

[110] Peretti (1979): xi, 7, 17–19. Cf. Corcella (1992): 266.

[111] Corcella (1992): 270. According to Eratosthenes, the first Greek map of the ecumene was drawn by Anaximander, followed by Hecataeus, *FGrHist* 1 T 11b and T 12a [= DK 12 A 6], T 12b. Cf. Pearson (1975): 140, Jacob (1988): 273, 281.

[112] Steiner (1994): 147–9, Jacob (1988): 274 with further references.

[113] Jacob (1988): 276–89.

[114] Schibli (1990): 1–4, West (1971): 3–4, von Fritz (1938), Toye (1997), and Fowler (1999).

[115] Schibli (1990): 1–13.

Pherecydes' work was undoubtedly oral and was due to the very author's activity; it is likely that he wrote his book as a συγγραφή, a mere transcript for himself.[116] The question why Pherecydes broke the tradition by writing a prose theogony can be addressed by taking into account both the content and the context of his work. Pherecydes combined local customs with exogenous (Semitic and Indo-Iranian) motifs into an alternative theology in competition with the Homeric and Hesiodic tradition. His doctrine was not much more rational than the traditional one, despite being possibly more systematic and 'aetiologic', establishing more clearly the cause-effect relationships.[117] On the one hand, the prosaic form was functional to marking the difference between Pherecydes' doctrine and its competitors;[118] on the other, it seems to imply different occasions for performance (not 'mass' religious festivals nor poetic contests, but 'niche' public *epideixeis*).[119] If West is right, the text was preserved by the Pythagoreans.[120] It seems unlikely that it circulated in fifth-century Athens: even Plato seems to ignore Pherecydes. However, Aristotle explicitly mentions him,[121] which could be taken as evidence for some restricted circulation of the book later in the 4th century.

Anaximander's book has been called by Kahn the "first specimen of a new genre, the treatise *peri physeōs*".[122] This genre, of course, was paralleled by hexametric poetry on nature. Like Pherecydes, Anaximander was a 'transitional' thinker—he is somewhat rational, but not entirely so—and apparently was still quite affected by 'poetic' culture and customs. According to Kahn, his preference for prose over metre was due to the influence of Ionian technical treatises, which were gradually replacing didactic poetry. However, as we have seen, asserting that a substantial amount of written technical texts circulated in sixth-century Ionia only rests on speculation.[123]

116 West (1971): 4–6, Bernabé (1979): 302.
117 West (1971): 75, Schibli (1990): 132–3, cf. Kahn (2003): 144–5.
118 Kahn (2003): 143, Schibli (1990): 133–4, .
119 Cf. Granger (2007): 425–8, Kahn (2003): 152. According to Cole (1991): 89 *epideixis* implies the existence of a written text.
120 West (1971): 7.
121 Arist. *Metaph.* 1091b 8.
122 Kahn (2003): 145.
123 Hawke (2003), *contra* Kahn (2003): 152–3.

Also, it would be anachronistic to think that Anaximander's book was meant as a means of diffusion for his thought. Anaximander inherited from Thales (who left no written work) a 'geometric' approach to nature and drew the first Greek map of the ecumene.[124] This map was a support for speculation and teaching: 'graphics' allowed the "objectivization of knowledge".[125] If such was Anaximander's attitude towards graphics—which of course include writing—we can imagine that he wrote down his teaching material and compiled a prose treatise. In this respect, Kahn is right in likening Anaximander's teaching to technical education.[126] His book might have originated as a transcript for this specific purpose (as an *aide-mémoire* for the teacher, rather than as reading material to circulate among his pupils) and did not circulate much outside Miletus. It was mostly unknown in mainland Greece: apparently, it did not even survive in a complete form to the age of Theophrastus.[127]
Out of all early Ionic prose works, Heraclitus' 'book' (whose nature is still quite unclear)[128] surely circulated in classical Athens. Heraclitus' obscure and oracular prose was not certainly aimed for large audiences.[129] Its mystic character required exegesis, and the written text (which was rhythmic and would be performed orally) was a necessary starting point. According to Diogenes Laertius (9.6.10), Heraclitus' σύγγραμμα became so popular that it gave birth to a 'textual community'[130] of followers, the Heracliteans. If it is true that the Heraclitean doctrine reached Athens (with Cratylus as a famous representative), it follows that the book itself made it to the city, retaining its status of script for private performance.[131]

[124] Jacob (1988): 279. Cf. also West (1971): 77–8. On Thales, see Dicks (1959): 298.
[125] Jacob (1988): 282.
[126] Kahn (2003): 145–7.
[127] Kirk (1955): 37–8.
[128] See Granger (2004) with further references.
[129] Osborne (1997): 30, cf. Thomas (2000): 173.
[130] See Rossi (1992): 93, Lilja (1968): 29–30, Dover (1997): 163–4, Steiner (1994): 88–9, 202–3.
[131] Which is in perfect accordance with an episode related by Diogenes Laertius, according to which Euripides—who was a notorious book collector, see Thomas (1989): 19, Steiner (1994): 212 and Flory (1980): 21, n. 35—gave Socrates his copy to read (2.22.5). On Aristophanes' parody of Euripides in the *Acharnians*, see Whitehorne (2002): 32–3.

Roughly contemporary to Heraclitus, Hecataeus drew a map and wrote geographical and genealogical prose works. The writtenness of his work is clearly stated by Hecataeus himself (*FGrHist* 1 F 1). Indeed, it is a prerequisite for his intellectual activity (and that of other Ionian genealogists) which was based on a comparative, systematic method.[132] It is not easy to assess whether (and how) Hecataeus' work ever reached Athens. Genealogy as a genre was also practised by the earliest Athenian prose writer, Pherecydes, who was active in the first half of the 5th century.[133] Periegetic geography, a genre of Homeric descent, could certainly appeal to popular audiences.[134] In particular, it must have been of interest in Athens after the Persian wars, as the city was developing into a 'cosmopolitan' capital, and it could also have contributed to the creation of an imperial ideology.[135] Unfortunately, the evidence for the way the genealogists' and geographers' λόγοι were performed is even scantier than their fragments, and not much can be concluded about their audience.[136] The most likely scenario is that the logographers travelled across the Greek world, in the same way as rhapsodes had been doing.[137] As is well known, this custom flourished later in the 5th century. Intellectuals toured every corner of the Greek world. Of course, Athens was a major centre of attraction (and also exported its own intellectuals), albeit not the only one.[138] A major (and early) group of travelling intellectuals were physicians, who gave public demonstrations of their

[132] Thomas (1989): 181–95, Detienne (1986): 72, Bertelli (2001): 83–4, Fowler (2001): 103–5. Cf. Nieddu (1993): 153–6.

[133] The exact date is far from established, see Jacoby (1947), Huxley (1973), Fowler (1999).

[134] Corcella (1992): 265, Kahn (2003): 154. On the shared formal features of genealogical and periegetic prose, see Nieddu (1993): 160.

[135] Kennedy, R. (2006), Webster (1973): 217–18.

[136] Performance of genealogies is well attested in the late 5th century, Thomas (2003): 173.

[137] Chaniotis (1988): 366. A similarity with rhapsodes has often been pointed out as regards the sophists—for instance, Schiappa (2001): 98–102 calls Gorgias a "prose rhapsode". This interpretation rests on both the stylistic features of their prose and their adoption of poetic attitudes and looks in performance, cf. Kerferd (1981): 29, Cole (1991): 71–4. For the same reasons, it does not seem inappropriate to extend this label to other early prose writers, cf. Lilja (1968): 21–31, Dover (1997): 160–4.

[138] Thomas (2000): 11–13.

medical skills and often sought civic appointment.[139] Their demonstrations (and, possibly, their lessons) included practical displays and epideictic speeches, which are preserved in some of the texts that make up the *Corpus Hippocraticum*. The earliest extant written redactions of Hippocratic works are dated to the late 5th century, and by that period Hippocratic material certainly circulated in Athens.[140] Strictly technical works were most probably put into writing for the sake of organization and accessibility for fellow doctors. Epideictic works, on the other hand, could still serve as transcripts for teaching and demonstrations.[141]

From the second half of the 5th century, Athens was visited by many of the most prominent thinkers in the Greek world. Parmenides and Zeno once attended the Great Panathenaia, probably on a political mission.[142] Anaxagoras moved from Ionia and spent thirty years in Athens before being exiled.[143] If Plato is not backdating a custom of his own day, both Zeno and Anaxagoras gave more or less extempore readings of their books, which were probably transcribed and circulated with or without their consent.[144] Herodotus, in turn, came to Athens in the second half of the 440s and likely held public lectures there.[145] In these lectures he probably presented some of the materials that he would eventually rework into his lengthy book, which was designed as such for a necessarily restricted audience of readers.[146] The written text we possess was probably intended by Herodotus himself as a script

[139] van der Eijk (1997): 84–5, Thomas (2000): 249, Dean-Jones (2003): 116–17.

[140] See Craik (2001).

[141] van der Eijk (1997): 93–8, Lloyd (1975): 189 (on dating problems), Thomas (2000): 250–4, Thomas (2003): 175–6, Jouanna (1992): 549 and 109–24, who draws a distinction between "cours" and "discours", cf. van der Eijk (1997): 79.

[142] Pl. *Prm.* 127a–b. See Panebianco (1970): 59, 62, Thomas (2000): 11.

[143] D.L. 2.7.10, DK 59 A 3. Cf. Steiner (1994): 204.

[144] Pl. *Phd.* 97b–c, *Prm.* 127c–d, Nieddu (1984): 237–9, Thomas (2003): 165–6.

[145] Webster (1973): 220, Thomas (1992): 4, Thomas (2000): 257, Fowler (2001): 107. See Pearson (1975) and Momigliano (1978) for a discussion of the sources.

[146] Johnson (1994b), Thomas (1992): 125, Flory (1980): 14 reckons that "a reading of the whole text would have required fifty or more hours, a team of readers and a number of days exceeding the length of any known festival". Not all parts of the *Histories* derive from λόγοι, see Canfora–Corcella (1992): 443–7, and 'oral' features do not necessarily betray a transcript, cf. Slings (2002).

for private reading. Nevertheless, as Thomas remarks, several points would replicate more or less faithfully elements of the materials which were performed in public.[147]

In the following decades, Athens became a major centre of attraction for the sophists. Most of them would only pay short visits, charm the youth, and—from a traditional Athenian point of view—spread dangerous relativistic ideas and related skills, namely how to spoil democracy by fooling the people by means of the art of persuasion. Rhetorical elaboration was as highly appreciated in entertaining epideictic performances as it was considered suspicious in serious 'pragmatic'[148] speeches: it was easily tracked back to written preparation and, ultimately, to a penchant for private (or even anti-democratic) decision-making.[149] Now, sophistic performances were oral and often improvised, and sophists did not use written texts when teaching either.[150] Their lessons normally took place in private houses and small groups and normally consisted of talking and debating, but they could also include lectures, which were prepared (written) in advance.[151] Moreover, the sophists used to hand out written copies of their speeches for their students to memorize as rhetorical exercises.[152] Evidently, this also contributed to their association with 'writtenness' altogether. Their speeches, which can be regarded as transcripts recording the original performance more or less faithfully, were also reperformed in new public *epideixeis* or read privately, in which case they were used as scripts.[153]

By the age of the sophists, Attic had dramatically increased its influence on Ionic

147 Cf. Thomas (2000): 260, Flory (1980): 22–7.

148 That is, political and judiciary speeches, see Walker (2000): 7–8.

149 Cf. Isoc. *Philippus* 25–9. See Kerferd (1981): 24–7, Schiappa (2001): 50–3, Ober (1989): 166 (discussing fourth-century sources), Thomas (2000): 11–13, Schloemann (2002). Concurrent openness and traditionalism were a hallmark of Periclean Athenian society, cf. Cassio (1981): 88–92.

150 Cf. n. 48 above, Thomas (2003): 180, Kerferd (1981): 28–9.

151 Cole (1991): 74.

152 Arist. *SE* 183b 38–9, cf. Schloemann (2002): 135, Kerferd (1981): 30–2, and Cole (1991): 75.

153 Thomas (2003): 164, 172, 180–1.

prose. Non-Athenian writers like Gorgias started using it,[154] thus violating a central feature of the Greek literary system—the connection between genre and dialect. According to Willi, such a 'rebellion' fits well in the cultural atmosphere of the sophistic age and its philosophical reflections on νόμος and φύσις. Writing prose in Ionic would correspond to following an artificial νόμος, whereas writing prose in Attic meant abiding by the φύσις of the (Athenian) audience.[155] It is remarkable, for instance, that of two pupils of Parmenides, Zeno, who had close connections with Athens, wrote Attic prose, whereas Melissus of Samos, who did not, wrote in Ionic.[156] In the end, φύσις prevailed, and by the final decades of the 5th century Attic had become the language of Athenian prose.

3.3.6 Historiography

In the late 5th and early 4th century historiography was not merely an entertaining genre, nor was it meant to be a scientific study of the past in a modern sense (it never became a school subject as such).[157] An important feature of classical historiography is its paradigmatic and educational nature. Thucydidean historiography would focus on political and military analysis, whereas the school of Isocrates would emphasize ethics. This made the texts of the historians particularly suitable for the 'higher education' of would-be politicians and orators, if it was at all possible to distinguish between them in fourth-century Athens.[158] Historical works were read (performed) in gymnasia and more or less 'private' educational institutions.[159] We have no information about epideictic performances of Thucydides, Xenophon or the Atthidographers,[160] and we can confidently assume that their works were conceived as books from the start.[161] In short, post-Herodotean historiography was a fully

154 Cassio (1981): 89–90.
155 Willi (2010): 111–14.
156 Cassio (1989): 143. The same transition from Ionic to the use of local dialects in prose writing can also be noticed in Doric areas, see Cassio (1989), Willi (2010): 115.
157 Thomas (1989): 3.
158 Nicolai (1992): 11–29, Nicolai (2007).
159 Morrison (2007): 224–5.
160 On which see Jacoby (1949) and, more recently, Harding (1994): 9–35.
161 Thomas (1992): 103, Morrison (2007): 219, Harris (1989): 86.

'written' genre, with all historical works being used as scripts. Indeed, Thucydides, in his famous programmatic paragraph (1.22.4), seems to envisage ἀκρόασις as a possible destination for his work, while clearly stating that it is not simply an ἀγώνισμα ἐς τὸ παραχρῆμα ἀκούειν. If ἀγώνισμα is to be taken as referring to public epideictic performance, its rejection does not exclude ἀκρόασις altogether, as Morrison points out.[162] Simply, reading aloud would not result in a display performance and would take place in small, private settings. Such speech situations allowed discussion and 'reflective interaction' with the text,[163] which is widely recognized as necessary in order to truly understand Thucydides.[164]

3.3.7 Philosophy

At the turn of the 4th century, philosophical dialogue emerged as a new literary genre, with Plato as its best known, but not the only, representative. Fictional transcriptions of conversations held by Socrates—which Aristotle (*Po.* 1447b 11) calls Σωκρατικοὶ λόγοι—were produced by several other Socratics, most of whom were older than Plato and started their production before he did.[165] The tradition on the creation of this genre is mostly anecdotal and not excessively trustworthy.[166] It is likely that some followers of Socrates used to report some memorable conversations of his or tried to imitate his style of conversation while he was still alive, and that they would eventually start to practise such activities in a written form, possibly

[162] Morrison (2007): 226–7. *Contra* Yaginuma (1995): 141–2. An alternative interpretation attaches to ἀγώνισμα the meaning of an accomplishment met with popular favour, Johnson (1994b): 232–8. Bakker (2002): 31–2 connects it with Herodotus' description of his work as an ἀπόδεξις, which he interprets as meaning the 'monumental record of an achievement'. Such terms, in this light, should be unrelated to the mode of publication and should rather refer to the intrinsic value of the literary work.

[163] Morrison (2004): 113–14, Morrison (2007): 220–2.

[164] Cf. Crane (1996): 7, for instance.

[165] The most prominent of whom are Antisthenes, Phaedo of Elis, Eucleides of Megara, Aristippus of Cyrene and Aeschines. See Kahn (1996): 4–29, Clay (1994): 26–32.

[166] The alleged inventors of the genre include Zeno of Elea, Alexamenus of Syros (D.L. 3.48), or (at least for an oral stage) a certain Simon, a cobbler from the Athenian agora (D.L. 2.123). For a full discussion, see Rutherford (1995): 11, Clay (1994): 32–3.

publishing these materials only after his death.[167] An immediate literary point of reference would have been provided by Attic comedy, which already featured Socrates himself among its characters. In the passage referred to above, Aristotle mentions Sicilian mime as a similar genre to the Σωκρατικοὶ λόγοι. There is no evidence that Sicilian mime circulated in Athens. Duris of Samos maintains that Plato was well acquainted with Sophron's works in particular (*FHG* II. 482 fr. 45).[168] If this is true, Plato might have first accessed them during his visits to Syracuse, which did not start until 388/7. This makes it chronologically implausible for Sicilian mime to have contributed to the birth and early development of the Socratic dialogue.[169] On the other hand, interesting similarities have been pointed out between the more elaborate Socratic dialogues and the light-touch, historical-anecdotical Ἐπιδημίαι of Ion of Chios.[170]

Arguably, the primary function of the Socratic texts was that of fictionalized historical memorials, or protreptics.[171] The effective representation of the 'Socratic way' mattered more than biographical accuracy. Not all of the Socratics were systematic teachers, and it would perhaps be too speculative to consider their works as teaching materials. It seems quite clear, however, that they were at least conceived with some didactic intentions. These remarks also apply to the Socratic works of Xenophon, which, just like his historical works, mainly aim at being useful for a more general public.[172] The nature and function of the Platonic dialogues seem quite different and have been widely debated. The question can be roughly summarized as whether Plato tried to present his own doctrine through some spokesman (possibly Socrates),[173] or he just tried to engage the receivers of his text into thinking 'philosophically'.[174] However, it is not worth going through the whole debate here.

[167] Rossetti (1991).

[168] Clay (1994): 36–7 considers this claim a hostile attempt to bring Plato 'down to earth'.

[169] See Wolfsdorf (1998): 126, n. 2 for a full discussion. Cf. Rutherford (1995): 12.

[170] See Hobden (2005): 97, Rutherford (1995): 13–14.

[171] Clay (1994): 25–8, 42.

[172] Waterfield (2004), Johnson, D. M. (2005): 39, Hobden (2005), Gray (1992): 60.

[173] So Rowe (2007): 15, 32, for instance.

[174] For instance, Frede (1992), Sayre (2002), Mittelstrass (2002). Cerri (1991): 128 argues that Plato's books were conceived as ὑπομνήματα.

On the whole, it can be argued that the audience and modes of publication of the non-Academic Socratic literature would be analogous to that of historiography: a 'private' and interested readership. As to Plato's dialogues, several scholars have argued, also on the grounds of the account of Diogenes Laertius (3.35–7), that they were probably read aloud in the Academy (most probably by a single reader) in order to prompt further discussion[175]—once again, a private performance of a script. On the other hand, Kahn suggests that the more 'literary' dialogues might have been conceived as 'teasers' for a broader audience,[176] which again points to private readership. Antigonus of Carystus (D.L. 3.66), however, reports that, in the late 4th century, editions of Plato could only be consulted for money, which means they were not on the market, and that they probably circulated only within the Academy.[177] Assessing the status of the extant works of Aristotle is also difficult. A number of studies detected rhetorical features that should reveal that at least some of them where polished lecture notes meant for oral presentation, rather than mere raw transcriptions or drafts.[178] If this is true, the speech situation for which they were designed must have been not too distant from the didactic context which we can envisage for Plato's own philosophical works.

3.3.8 Oratory

By definition, oratory is an oral genre, or at least, it originated as such. Speeches were central to political life and decision-making, as well as to the administration of justice. The functioning of a democratic *polis* like Athens had public 'pragmatic' oratory at its core from the very beginning, well before speech writing became

[175] Allan, D. J. (1980): 249, Usener (1994): 207–29, Ausland (1997): 386–7, Moors (1978): 77, Morrison (2007): 222, Henderson Collins II (2012). Rossetti (1991): 29 maintains that the 'conative' features of the dialogues (such as the large number of vocatives) would suit well a plurality of readers, and he also argues that more than one copy might have been used in a dramatized reading of this kind. I find the latter argument unsustainable, and I agree with Usener (1994): 210–11, who interprets the same stylistic features of the dialogues exactly in the opposite direction.

[176] Kahn (1996): 381, Kahn (2003): 160.

[177] Van Groningen (1963): 8–10.

[178] van der Eijk (1997): 92, 118, Schütrumpf (1989), Föllinger (1993).

common practice.[179] As we have seen, this happened around the age of the sophists. Written composition was not at all new for 'display' literature, if we include under this label 'public' poetry (for instance, choruses and drama) and even the Ionian 'lecture notes'. The sophists, on their part, turned eloquence into a teachable skill, and written copies of their speeches were given away as teaching materials and started circulating as scripts of their own right. At this stage, the extension of written composition to traditional pragmatic oratory was an innovation[180] which certainly encouraged the subsequent written circulation of some forensic and deliberative speeches. The turn of the 4th century is also the age when speech writing for others to deliver[181] emerged as a profession (λογογράφος),[182] and a much despised one.[183] Written texts, however, would not normally be held in hand by public 'pragmatic' speakers as they were performed: as we have seen, good orators were supposed to conceal the preparedness of their speech altogether,[184] and such texts

[179] According to *Suda* (π 1180, s.v. Περικλῆς), Pericles was the first orator to have delivered a speech written in advance in a lawcourt. See Hansen (1991): 12, 305–6, MacDowell (2009): 1–2.

[180] Improvisation (αὐτοσχεδιάζειν), however, was still practised in the 4th century, at least by some ἰδιῶται, cf. Isoc. *In Sophistas* 9, Pl. *Mnx* 235c, 236b. MacDowell (2009): 5–6 argues that most would-be Ecclesia (deliberative) speakers would find it "impracticable to write their speeches beforehand", and he agrees with Trevett (1996a): 441 on the fact that Demosthenes only did so at the onset of his career, "when he had less confidence in his ability to extemporize". On Demosthenes as an improviser see Dorjahn (1947, 1950, 1952, 1955, and 1957).

[181] Or what Dover (1968) calls 'consultancy': a 'consultant' could either "compose a complete speech for the litigant" or "instruct the litigant in the presentation of the case, either in broad outline […] or in detail, with suggestions for the precise wording of whole sections of the speech" (p. 150). Dover's ideas on composite authorship have not met with general acceptance, see Worthington (1993), Whitehead (2004): 156, Usher (2007), and MacDowell (2009): 4 with further references.

[182] Aeschin. *In Timarchum* 94. A discussion of this term in Lavency (1964): 36–45.

[183] Pl. *Phdr.* 257c, D. *De Falsa Legatione* 246 and 250, Aeschin. *In Timarchum* 94, *De Falsa Legatione* 180 and *In Ctesiphontem* 173, Din. *In Demosthenem* 3, Antiphon fr. 3 Gernet 1.11–13, cf. Pearson (1975): 6–7, Carey-Reid (1985): 16–17.

[184] Cf. Alcid. *De Sophistis* 13, Arist. *Rh.* 1404b 18–21. On this purpose, for instance, Demosthenes sometimes adopts the expedient of faking forgetfulness ('I nearly forgot to mention…'), as in *De Falsa Legatione* 234 and *In Meidiam* 110. In the latter oration, Demosthenes almost apologizes for having prepared his speech beforehand (*I. M.* 191).

can be considered pure transcripts for public performance. Ideally, speakers had to learn their speech by heart and try to preserve the exact wording.[185] It is unlikely, however, that they consistently succeeded in doing so. Moreover, the background of an experienced orator must have included the ability to speak extempore. More often than not, dealing with the situation at hand and with the opponent's reaction must have required good improvisational skills.[186]

Now, the forensic and deliberative speeches we can read today are written versions that must have been put into circulation by somebody at some point. The oldest speeches we have—those of Antiphon—date to the 410s. Lysias was active in the first two decades of the 4th century, and Isocrates' production started in the very same period. The majority of the surviving speeches of the Attic orators, however, was composed between 355 and 322.[187] It is hard to establish whether the speeches were published by their authors or by someone else and why forensic and deliberative speeches were published as written texts at all. As a general principle, it must be borne in mind that the answers to these questions may vary from speech to speech, even when written by the same author. Therefore, such questions ought to be addressed for each text individually.[188]

It is useful to mention here that not all forensic and deliberative speeches were composed for specific occasions or actual public delivery. By the end of the 5th century the practice of writing fictional speeches as models for students or as more or less concealedly political pamphlets had established itself. Speeches in Ionian and Thucydidean historiography represent both an immediate precedent and a contemporary correlate to such fictional oratory.[189] For a start, they are not faithful

See Lavency (1964): 124, MacDowell (1990): 27, MacDowell (2009): 3, and Thomas (2011): 171.

185 Alcid. *De Sophistis,* in particular at 18, cf. Quintilian, *Inst.* 11.2.2, 28 and 49. According to Lavency (1964): 184–9 occasional speakers (such as the clients of the logographers) could in principle have read aloud a written copy of their speech.

186 MacDowell (1990): 27–8, MacDowell (2000): 23, MacDowell (2009): 3, Dover (1968): 150, n. 4, Schloemann (2002).

187 Dover (1950), Hansen (1991): 13.

188 Cf. Nicolai (2004): 19, MacDowell (2009): 8.

189 Cf. Nicolai (2004): 85–7.

transcriptions of the ones that were actually delivered, if they were delivered at all.[190] This does not even apply to those which we can assume the writers themselves witnessed, as Thucydides confesses (1.22). The historian's effort would consist of preserving the general sense of the actual speeches (ἔχεσθαι τῆς ξυμπάσης γνώμης τῶν ἀληθῶς λεχθέντων), both those he had personally attended and those he had only heard reports of.[191] The rhetorical features of such speeches, which include the speaker's *ethos*, would all be the historian's own. Moreover, they would be tailored for the *historian's* own audience, rather than for that of the *speaking character* alone.[192] This applies all the more to Xenophon, the accuracy and even the historicity of whose speeches is anything but a certainty.[193]

The earliest fictional forensic speeches we have are the *Tetralogies* traditionally (and probably correctly) attributed to Antiphon, which consist of three groups of two prosecution plus two defence speeches for imaginary homicide cases, most likely dating back to the last quarter of the 5th century. According to Gagarin, the *Tetralogies* can still be considered an instance of sophistic *antilogiae* rather than model speeches aimed at teaching courtroom techniques. The intended audience would still be one of students and intellectuals interested in broad intellectual training rather than one of would-be forensic speakers. The Ionic flavour of the prose matches such an intellectual character, and fits the hypothesis that the intended audience was an 'international' one, since Ionic would still be the standard prose language outside Athens.[194] In terms of delivery, we can infer that the *Tetralogies* were scripts for private performance. Another significant category of

190 Hansen (1993), for instance, argues that battlefield harangues are literary inventions and the result of a "stylized transformation of history into rhetoric" (p. 179). For a lengthy response to this view see Pritchett (2002). For a detailed discussion of battlefield rhetorics see Iglesias Zoido (2007). On the Homerizing character of the speeches in Herodotus see Boedeker (2002): 104–6.

191 Cf. West III (1973).

192 Cf. Hornblower (1987): 45–72. On *ethopoiia* in Thucydides see also Tompkins (1972). On the function and purposes of speeches in Thucydides see, among others, Thomas (2003): 201–4.

193 Delebecque (1957): 97, 264 and 271, cf. de Strycker-Slings (1994): 2–3.

194 Gagarin (2002): 54–9, Usher (1999): 6 and 355–9.

fictional forensic speeches is that concerned with the trial of Socrates, which includes a significant number of works that can be dated to the decades between 395 and 375. Apart from Plato's and Xenophon's, *Apologies of Socrates* are said to have been written by Lysias and Theodectes of Phaselis, but still others could have existed.[195] famous *Accusation of Socrates* was written by the Athenian sophist Polycrates,[196] a teacher of rhetoric[197] who was well known for his paradoxical *paignia*. It is likely that the *Accusation* itself was a work of this type, despite the hellenistic rumour that it corresponded to the actual prosecution speech pronounced at court.[198] This work was a representative of the sophistic custom of writing imaginary speeches related to occasions belonging to the historical or mythological past[199] and must have been conceived primarily as a transcript for epideictic performance. A more serious *Apology* like that written by Plato drew on the same tradition. However, concerned as it was with philosophical and political issues, it must have circulated primarily as a written script for private performance,[200] for both didactic and 'promotional' purposes,[201] and was probably intended, as Rowe maintains, for a much wider audience than his dialogues.[202] It is quite telling that speeches of the same genre and set in the mythical past were also written by Isocrates (*Helen*, *Busiris*). Isocrates' epideictic and deliberative speeches were never delivered in public, but they were the product of his academic activity[203] and "were probably read at leisure […] by pupils, ex-pupils, potential pupils, and others with an interest in political debate".[204] Isocrates himself confesses his inability to speak in

195 Cf. X. *Ap.* 1. On Theodectes see de Strycker-Slings (1994): 4, n. 7.

196 Isoc. *Busiris* 4.

197 D.H. *Is.* 20.

198 Livingstone (2001): 28–40, with further references.

199 Other famous examples include Gorgias' *Helen* or the *Defence of Palamedes*, Dover (1968): 190–1, Usher (1999): 4–5.

200 Cf. Usener (2003).

201 de Strycker-Slings (1994): 8–16.

202 Rowe (2007): 80–7.

203 See Nicolai (2004): 135–42.

204 Usher (1999): 297, cf. Nicolai (2004): 130. Among primary references to ways of accessing written speeches see *Panathenaicus* 201, 216 and 251. It goes without saying that reading would still be oral, and it is not surprising at all that Isocrates took good care

public and that he deliberately chose writing as a medium.[205] In his *Antidosis*, he instructs the speakers on the nature of his work and even on how to read it.[206] His works, of course, were not meant to simply entertain the readers. Both his political and his epideictic speeches were concerned with serious issues and were ultimately meant to indirectly influence Athenian politics in the long run by influencing the moral and philosophical education of the readers.[207] As Nicolai remarks, Isocrates was the inventor of a new literary genre: an experimental type of prose which blended didactic and political purposes, but which was unrelated to a specific occasion yet at the same time provided elaborate examples of how to adapt a speech to the circumstances (καιρός), which in Isocrates' works were but imaginary.[208] We can regard this part of his production as consisting of scripts for private performance which never went through the stage of transcripts.

Isocrates also wrote forensic speeches which can all be assigned to his early years: *In Euthynum*, *In Callimachum*, *De Bigis*, *Trapeziticus*, *Aegineticus*, and *In Lochitem*. It has been argued that at the onset of his career Isocrates was forced to earn a living as a logographer.[209] Later on, Isocrates explicitly disdained this type of oratory,[210] and his heirs (if not he himself) denied that he ever wrote speeches for the tribunal.[211] On the other hand, these speeches have survived (there are no strong arguments for inauthenticity),[212] and Aristotle witnesses that copies were sold in bundles in his own

of the aural features of his speeches, on which see Bons (1993) and Usener (1994): 71. Specific hints to the speech situations in which the speeches were to be delivered, or the mere epideictic character of some speeches, cannot be taken as evidence for public delivery, since they can be interpreted as a literary custom, cf. Nicolai (2004): 24–6.

205 *Panathenaicus* 9–11, *Philippus* 81. Thomas (2003): 186–7 infers that Isocrates' withholding from public speaking let him circulate minority views without having to face a potentially hostile audience.

206 *Antidosis* 10–13.

207 Nicolai (2004): 131–5, Usher (1999): 297–8.

208 Nicolai (2004): 53–4.

209 Most recently Usher (1999): 118–26, Whitehead (2004): 161.

210 *Antidosis* 3, 27,42, 144, 228, 238, 276, *Helen* 7, *Panathenaicus* 11, 240. Cf. Whitehead (2004): 152–4, Usher (2004): 115.

211 D.H. *Is.* 18.

212 Cf. Cloché (1963): 9. As Whitehead (2004): 157 remarks, Dionysius' vouching for authenticity is a significant one.

time.[213] Aristotle outlived Isocrates by 15 years, so such circulation might have started after the writer's death. It has been claimed that not all of these speeches were written for clients. Wilamowitz, for instance, regards some as fictional 'sample' speeches, others as the works of a political publicist or as purely literary exercises. He also claims that the speech *In Callimachum* was a real forensic speech which was published by the client himself.[214] Now, as Nicolai points out, the manuscript tradition seems to prove that the Isocratean corpus had taken shape at a very early date, which implies that the writer himself, with or without the mediation of his school, had direct control on the early publication of all of his own works. Nicolai also maintains that the incomplete speeches are the result of a deliberate selection executed by Isocrates and his school.[215] As a consequence, he regards Isocrates' forensic production as early didactic materials, that is, as fictional speeches which Isocrates wrote following the common practice in rhetorical teaching about the turn of the 4th century.[216] In this light, both Aristotle's witness and the denial on the part of Isocrates' heirs that he ever produced any forensic speeches for actual use in the lawcourt would correspond to the truth. We can assume, as Nicolai does, that Isocrates, while generally despising forensic oratory, did not disown his own, nor did he oppose the circulation of his early works (it would have been impossible to withdraw a book from the market anyway), even though they were quite remote from his later educational system.[217] It seems plausible to suggest that Isocrates preserved and edited[218] his early forensic speeches exclusively for personal[219] and

213 Arist. fr. 140 Rose, in Dionysius (ibidem). Dionysius suspects that Aristotle wished to discredit Isocrates. Nevertheless, he believes that he did write some forensic speeches.

214 Wilamowitz (1920) II: 107–8.

215 Partially following Mathieu, see Mathieu-Bremond (1928): 37–8, cf. Cloché (1963): 26.

216 Nicolai (2004): 105–7, 158–61.

217 Cf. Whitehead (2004): 160.

218 This could be an alternative explanation of the epideictic character of the speech *De Bigis*, as detected by Usher (1973): 49 through stylometry (with Usher ascribing it to an early evolution of Isocrates' style).

219 Whitehead (2004): 167 argues that Isocrates recycled materials from his forensic speeches in later ones, providing an extensive list of "apparently conscious repetitions and reworkings" at n. 97 (pp. 180–1).

classroom use as an inventory of arguments and *rhetorical* (not necessarily *forensic*) techniques. He would use them for decades denying that he ever wrote them for money and without ever publishing them.[220] Now, the latest speech of this group, the *Aegineticus*, dates to about 390 BC. At Isocrates' death fifty-two years later his heirs might have released them into the book market, denying that they were ever used in an actual lawcourt, which would have happened when they were children, if they were born at all.[221] This would be a guarantee of their authenticity for the contemporary market and account for their editorial 'polish' as well as their early inclusion into the corpus.

If epideictic speeches targeted a market of leisurely readers, it is less straightforward to recognize that of the written copies of deliberative and forensic speeches that had been delivered in the Ecclesia or in a courtroom. Copies of forensic speeches derived more or less directly from the text that the orator prepared before the trial for himself or his client to memorize and recite. In some cases we can argue that what we read corresponds quite faithfully to the original transcript. Many speeches, however, could not have been delivered in the courtroom in the form in which they appear today.[222] Demosthenes' *De Falsa Legatione*, for instance, is simply too long to have been delivered as is in the 132 minutes each speaker was allowed in court.[223] It might be the case that either the published text includes preparatory materials that

[220] Overall, Isocrates only started publishing his works late in his life, see Usher (1973): 60.

[221] The interest in the actual trials would definitely have faded by then anyway, cf. Nicolai (2004): 159 .

[222] Even ancient commentators sometimes show doubts in this respect, see Nicolai (2004): 17–20 for a survey of the sources. Cf. Cole (1991): 117–18.

[223] This was the maximum time allowed for a speech in public prosecutions. The time was measured through a water-clock (κλεψύδρα). The time for the speeches amounted to 11 *amphoreis* (Aeschin. *De Falsa Legatione* 126), and each *amphora* was equivalent to 12 χόες. Archaeological evidence has shown that each χοῦς corresponded to about 3 minutes, from which it follows that the total time assigned to the speeches amounted to about 6 hours and 36 minutes. Each speech (the prosecution, the defence, and the speech on the penalty in the event of conviction) was allowed one third of the time (Aeschin. *In Ctesiphontem* 197), that is to say 132 minutes, cf. MacDowell (2000): 23, Hansen (1987): 92. Hansen (1991): 200 erroneously considers the 11 *amphoreis* the duration of each third of the juridical day. Speeches for private suits could last at most 10 χόες, that is 36 minutes (Arist. *Ath.* 67.2). For a detailed discussion see Rhodes (1981): 719–28.

were omitted during delivery, or some materials were added later, meaning that the text was edited before written publication. All in all, the text that was delivered might have been much simpler than the published version.[224] Another frequent suspicious feature is the orator's anticipation of his opponent's counterarguments. However, this might often be interpreted as effective guesswork.[225] As to the written circulation of such texts, Dover famously singled out four categories of potential readers: the partisan ("the man actively committed to politics as an associate of one or other of the parties to a lawsuit"), the floating voter ("the man […] whose allegiance can be determined, at least temporarily, by the impact of rhetoric"), the would-be politician ("that is to say, at Athens, the young man […] who knows that to become influential he must be a persuasive speaker"), and the connoisseur ("the man who enjoys oratory as an art form").[226] Partisans and floating voters would only be interested in lawcourt speeches that had some political significance.[227] Would-be politicians, on their part, would read forensic oratory as model speeches, which is quite easy to believe. Usher stresses the importance of connoisseurs as a category of readers: on the grounds of sources such as Aristophanes' *Wasps* and a passage from Thucydides (1.77) which describes the Athenians' passion for trials (φιλοδικεῖν), he argues that at least some Lysianic speeches can be equated to epideictic oratory, that is, that they were read at leisure as a form of entertainment.[228] Overall, the political relevance of some speeches and the merely literary potential of others should explain why some speeches were reworked before publishing and some were published that might not have been delivered at all.[229] Public speakers might have circulated revised

[224] Worthington (1991): 63.

[225] MacDowell (2000): 23–6, cf. Hubbard (2008): 188. Canfora (1974): 37–44 regards these features as evidence for unauthorized circulation (see below).

[226] Dover (1968): 170–1.

[227] For instance, Lysias 34 (see n. 229), cf. Nicolai (2004): 15.

[228] Usher (2004).

[229] As Dionysius (D.H. *Lys.* 32.15) argues of Lysias 34 (Περὶ τοῦ μὴ καταλῦσαι τὴν πάτριον πολιτείαν Ἀθήνησι), a deliberative speech, cf. Usher (1999): 68–70. A forensic speech which might not have been delivered is Demosthenes' *In Meidiam*, see MacDowell (1990): 23–8, MacDowell (2000): 23, Dover (1968): 172–4. Dover (1968): 188–9 also regards as reworked Lysias' *De Caede Eratosthenis* and Lysias 25 (Δήμου καταλύσεως

versions of their politically-charged forensic speeches in order to get the last word in the debate,[230] and logographers might have edited their speeches into entertaining epideictic pieces,[231] a production which was technical or 'commercial' rather than purely literary.[232] The actual forensic texts as we have them can be considered scripts for private performance which are based on a transcript for public performance. This does not exclude the possibility that they were used as transcripts for memorization and further recitation, if only in didactic contexts.[233]

If we turn to deliberative (symbouleutic) speeches, the picture is no less complex. At Ecclesia meetings improvisation would be an even more essential skill than in the courtroom. Speakers did not know when their turn to speak would be, nor could they easily guess what the other speakers would talk about. Written preparation would not be very useful and would even be regarded as suspicious within the context of political debates rather than private trials.[234] As a matter of fact, 'real' assembly speeches only constitute about 11% of surviving Attic oratory, and almost all of these few speeches are Demosthenes' own.[235] It appears that publishing them was not customary, nor was writing them down altogether. The debate as to what

ἀπολογία)—"the speech as a whole has the flavour of a political pamphlet", Usher (1999): 72. Worthington (1991) brings in as internal evidence for extensive reworking of published speeches multiple ring-composition, which he identifies in Dinarchus' speech *In Demosthenem*. Ring-composition, however, need not be regarded as a sophisticated feature of written literature aimed at a reading audience, as demonstrated by Gagarin (1999): 168–9.

230 Hubbard (2008).

231 Porter (2007) considers *De Caede Eratosthenis* as a fictional display speech, designed to entertain the audience and to promote the logographer. As Dover (1968): 70 remarks, the famous *Erotikos* in Plato's *Phaedrus* 230d–34c is the only παίγνιον ascribed to Lysias we possess. Usher (1999): 106–10 also regards Lysias 24 (Ὑπὲρ τοῦ ἀδυνάτου) as a parody (but cf. Dover (1968): 189). If *De Caede Eratosthenis* was indeed a παίγνιον of this kind, it is likely that the circumstances of its publication would have been similar to those described in the *Phaedrus* (that is, private), although Lysias was a public epideictic performer, cf. Gigante (1960) on the *Olympiacus*. See 5.1 for a full discussion of this problem.

232 Cf. Trevett (1996b).

233 Nicolai (2004): 20.

234 Cf. Lavency's ideas on written texts being read in the courtroom (n. 185 above).

235 Hansen (1989) [Hansen (1984)]: 286, Trevett (1996b): 433.

stage of the composition the written assembly speeches we possess represent has been quite lively. As we have seen, it was mostly unexperienced orators who relied on writing to prepare their speeches, whereas more accomplished ones would rather improvise. With regard to this, MacDowell and Trevett have made the point that most of Demosthenes' published deliberative speeches date to the early years of his career:[236] he composed at least eight out of fifteen political speeches before the age of forty.[237] This is also true of Andocides' *De reditu suo,* which was unsuccessfully delivered by the author in his early thirties (sometime between 411 and 405) and does not show much rhetorical sophistication.[238] Such transcripts would be published for similar reasons as those we have pointed out for forensic speeches, that is, their political relevance, and in some cases, their rhetorical exemplarity (this would not be the case with the speech of Andocides). In general, success was not a requisite for a speech (be it forensic or deliberative) to be preserved and published.[239] Hansen remarks that not all of the political speeches that Demosthenes delivered were published—possibly, they were not even written at all—but on the other hand, all the published ones seem to have survived. Ancient sources preserve no fragments nor titles of further speeches which we do not possess.[240] However Trevett, followed by MacDowell, is inclined to deny that Demosthenes deliberately revised and published his symbouleutic speeches in his lifetime, due to lack of strong direct evidence for their circulation.[241] Demosthenes must have prepared in writing only a few significant speeches even as a mature orator, which would make him stand out among his contemporary colleagues.[242] These speeches, Trevett argues, were collected and published after his death.[243] Nicolai, on his part, supports the idea that

[236] See n. 180 above.

[237] According to the table at MacDowell (2009): 12.

[238] Kennedy (1958): 33–6.

[239] Lavency (1964): 191, Worthington (1993): 68 with a list of unsuccessful speeches.

[240] Hansen (1984). Lost (apocryphal) works of the Demosthenic corpus—listed at MacDowell (2009): 8—only include forensic speeches.

[241] The only explicit mention in the sources being a fragment of Hermippus (3rd century BC), Plu. *Dem.* 11.4 = *FGrHist* 228 F 18. Cf. Trevett (1996b): 426.

[242] So Trevett (1996b): 437.

[243] Cf. MacDowell (2009): 7–8.

unauthorized copies of Demosthenes' speeches might have circulated already in his lifetime. This could have been allowed and sometimes even promoted by the orator himself.[244] All things considered, it seems plausible that the texts we possess roughly correspond to Demosthenes' preparatory materials in a more or less raw state and can be regarded as transcripts for public performance.

A short note on a work which is hard to fit in the picture outlined in this chapter and which indeed has raised much scholarly disagreement, the anonymous *Constitution of the Athenians*, whose author is traditionally referred to as Pseudo-Xenophon or the 'Old Oligarch'. Many claims on the date, the authorship, the place of composition or publication and the intended audience have been made.[245] Recently, Marr and Rhodes have concluded that the *Constitution* might be a rhetorical exercise dating to the 420s, probably written by a student of Antiphon's.[246] This, however, leaves unanswered the question of how an allegedly unsophisticated and juvenile piece of literature emerged out of the classroom and survived to be numbered among Xenophon's minor works without having been published, if not by sheer luck.[247] Much in this discussion seems to be based on a qualitative evaluation of the style and argumentation of the *Constitution* which I shall not undertake here. At present, we can only surmise that it is unlikely that this short work was ever performed in public, and we might regard it as a script for private performance. Of course, if Marr and Rhodes are right, we should also assume that this text was memorized by the student who wrote and delivered it in the classroom, which would make it a transcript for private performance.

[244] Nicolai (2004): 64–5.
[245] A helpful summary in Marr-Rhodes (2008): 31–2.
[246] Marr-Rhodes (2008): 5–16, cf. Thomas (2003): 184.
[247] Mattingly (1997): 352.

4. *Perspicuitas*

4.1 A tale of two *lexeis*

Distinguishing texts according to the mode of performance they are meant for is not a new idea: in the *Rhetoric* (1413b–1414a 31), Aristotle defines the 'written' style (λέξις γραφική) as opposed to the 'competitive' (or 'debating') style (λέξις ἀγωνιστική). Far from alluding to a "written/spoken division",[1] Aristotle outlines the rhetorical aspects of either *lexis*, giving a relatively detailed account of what he regards as more appropriate to either of them. Aristotle's discussion, in turn, is not unprecedented.[2] A clear distinction between speeches to be spoken and speeches to be read privately[3] had already been drawn by Isocrates, who describes the difference between the λόγοι λεγόμενοι and the λόγοι ἀναγιγνωσκόμενοι (*Philippus* 25–6) in terms of delivery and effectiveness, without taking into account any properly linguistic fact.[4] Alcidamas (*De Sophistis*) makes similar remarks. He asserts that forensic speeches should sound much more natural and less worked out than sophistic readings, which were often given written circulation, in order to retain their credibility. In general, he condemns the custom of writing the speeches for later memorization and considers this practice inferior to improvisation.[5] Since we are *only* dealing with written texts, Alcidamas' rhetorical remarks are ultimately of little use. We are told that speeches to be publicly delivered should sound as

1 O'Sullivan (1996): 126–7 (*pace*). Cf. Graff (2001): 22, Gagarin (1999): 165. O'Sullivan (1992): 46, n. 138 argues that "the fact that one style is called 'written' by Aristotle can only make sense if there is something 'unwritten'", adding that "in general, says 'Demetrius', the imitation of conversation is suited to an ἀγών, and hence to delivery, rather than to writing (226)". O'Sullivan's point can only be taken if the written/unwritten opposition applies to publication: Aristotle is not alluding to a divide between written and spoken *language*, but to different different *modes of publication*.

2 See Graff (2001): 22–7 for an accurate discussion of the influence of Isocrates and Alcidamas on Aristotle's approach.

3 Cf. Usher (1999): 305, n. 38.

4 Graff (2001): 23, O'Sullivan (1992): 55.

5 Cf. Muir (2001): 40–67.

extemporary as possible and what stylistic and rhetorical features convey this impression. Mimesis of such features could make a 'bookish' text appear like a piece of extemporary literature,[6] not to speak about mimesis of the spoken language of everyday conversation. More importantly, the *absence* of the same features from a text would not mean that the text was not meant for public delivery: it might only imply that a speaker would not sound as if he was improvising. As we have seen, this was only relevant for 'pragmatic' public orators. After all, this was a *desideratum* more than a necessity. The same applies to features like asyndeton and repetition, which Aristotle regards as most suitable to the competitive style (*Rh.* 1413b). Nothing prevents using them in a private-delivery text, and nothing compels speakers to use them in a public-delivery text. We need to focus on what a writer *needed* to do when composing a text to be delivered orally in public.

Hearing a text in a public speech situation is quite different from hearing it in a private speech situation. As we have seen at 2.2, in private speech situations the audience has a higher control on how the text is accessed than in public speech situations. When encountering an obscure passage, a 'private' hearer is able to seek clarification by asking the speaker to stop or to repeat, or discuss the passage with the speaker himself and, possibly, with other listeners, or even to consult other texts. All of this would not be possible in a *public* speech situation: a good public speaker should make sure that his text be *as comprehensible as possible* right upon the very first hearing.[7] If one writes for a *private* speech situation—which roughly corresponds with what Aristotle calls 'reading' throughout the discussion of the two *lexeis*—this will not be *a necessity*: as Slings points out, "one can, after all, read a sentence through in one's own tempo, so a slightly more complicated syntactic structure is much less of a problem".[8]

If we take the linguistic dichotomy between clarity and obscurity to correspond to the socio-cultural dichotomy between public and private modes of performance, we

6 Cf. Gagarin (1999): 166, Cooper (2004): 150. Cf. also Slings (2002): 76–7 on Herodotus' 'oral' style.

7 Cf. Sluiter (forthcoming).

8 Slings (1992): 100, cf. Gagarin (1997): 34.

can formulate the hypothesis that text that is composed envisaging public performance should be clearer than that composed envisaging private performance. In order to test this hypothesis, we need to compare the clarity of texts representing each mode of performance. In order to do so, we need to establish a methodology to assess the clarity of texts, at least as far as their *linguistic form* is concerned, in the most objective way. Once again, this idea is not entirely new. Other modern scholars have tried to draw a distinction between texts meant for public delivery and those meant for private, written circulation, often producing lists of linguistic and rhetorical features which they regard as pertaining to one mode or the other. Features ascribed to private-delivery texts in the literature include 'extreme' hyperbaton,[9] long sentences, parentheses, or redundant periphrases with abstract nouns.[10] In some studies additional features are mentioned, such as complex hypotaxis[11] and the frequency of sentences starting with the main clause.[12] As we shall see, most of these features had already been identified in the ancient rhetorical literature as factors which contributed to obscurity. On the other hand, some of them simply correspond to empirical facts for us non-native-speakers and (forcibly) translators of a dead language: long sentences, for instance, can be hard to read and translate for most of us, whereas short sentences may be much easier; however, this is quite different from what Aristotle maintained in the passage I have just discussed. Moreover, turning a list of stylistic phenomena of this kind into a set of thoroughly defined linguistic features to be quantified for dimensional analysis is problematic. One might wonder, for instance, what an 'extreme' hyperbaton is, or whether subordinate structures really are *per se* harder to understand than paratactic ones, self-evident as this may seem. Our goal is to establish what native speakers of Attic found difficult, and we cannot only rely on our own impression, whatever our

9 Gagarin (1999): 170, cf. Hoffer (2007).

10 Gagarin (1999), Yaginuma (1995), Rossi (1978), Rossi (1983): 8–11. Gagarin (1999): 167–8 mixes up the stylistic features typical of oral *composition* with those related to public *delivery*, but they do not necessarily coincide.

11 Yaginuma (1995): 136, cf. Gagarin (1999): 169.

12 Yaginuma (1995): 134, 137. Such sentences were called "absteigend" by Blass (1887): 224. On the stylistic reflexes of clause order see Ronnet (1971): 91–9.

proficiency in Attic is.

An obvious step to take in this direction is to extrapolate information about clarity and obscurity from the primary sources. Luckily, a reflection on text understandability is not unknown to ancient rhetorical thought. The idea that 'clarity' (σαφήνεια, *perspicuitas*, as opposed to ἀσάφεια, *obscuritas*) is an essential component of the 'virtue of speech' (ἀρετὴ λόγου)[13] dates back at least to Aristotle himself. If a speech is not clear enough, he says, it will not be able to demonstrate its points and will be a complete failure. Clarity alone, however, is not sufficient: it must be combined with propriety and ornamentation (*Rh.* 1404b 1–6, 1406a 34, 1414a 22–6). The treatise known as *Rhetorica ad Alexandrum*, also dating to the 4th century, recommends being concise, convincing, and clear: this will ensure that 'hearers may grasp the events which we are describing'. At the same time, it draws a distinction between clarity ἀπὸ τῶν πραγμάτων and ἀπὸ τῶν ὀνομάτων (30.4–7). Clarity concerning 'facts' is achieved when they should be reported in the correct temporal sequence, with no shuffling (μὴ ὑπερβατῶς δηλοῦν) nor undue digressions (ἐὰν μὴ προαπολιπόντες τὴν πρᾶξιν, περὶ ἧς ἂν ἐγχειρήσωμεν λέγειν, πάλιν ἑτέραν ἐξαγγείλωμεν). Clarity concerning words is achieved when appropriate and common words are used (ἐὰν ὅτι μάλιστα τοῖς οἰκείοις τῶν πραγμάτων ὀνόμασι τὰς πράξεις προσαγορεύωμεν καὶ ἐὰν τοῖς κοινοῖς). This corresponds to a point made by Aristotle, who recommends using τὰ κύρια ὀνόματα and warns against overusing unfamiliar words in prose which should aim at being convincing (*Rh.* 1404b 5–19). In the same passage, the *Rhetorica ad Alexandrum* also recommends avoiding hyperbaton and preserving the natural order of words (σαφῶς οὕτως ἐροῦμεν […] ἐὰν […] μὴ ὑπερβατῶς αὐτὰ τιθῶμεν, ἀλλ' ἀεὶ τὰ ἐχόμενα ἑξῆς τάττωμεν). Theophrastus, according to Cicero (*Orat.* 79), lists four virtues of speech. Here clarity features alongside correctness[14] and, once again, propriety and ornamentation.[15]

The Stoics, between the 3rd and the 2nd century, brought back συντομία ('conciseness') as a fifth virtue to the list (D.L. 7.59). This also included σαφήνεια,

13 Innes (1985): 255.

14 An Aristotelian notion (*Rh.* 1407a 19), Atherton (1993): 90.

15 See Innes (1985).

πρέπον ('propriety'), κατασκευή ('ornament'), and ἑλληνισμός ('correctness').[16] They defined σαφήνεια as a 'lexis (a diction or an utterance)[17] which presents the meaning in an intelligible way'. In contrast, they call ἑλληνισμός a φράσις ('way of speaking'). Baratin and Desbordes explain this terminological difference by maintaining that speaking correctly is a "*manière de parler*" which, if applied, implies that the diction is clear, concise, appropriate, and elegant. If, as the Stoics believed, no thought can exist separately from its linguistic form, there must only be one way—the correct way—of expressing thoughts. By definition, such a way cannot be improved, and all deviations are for the worse. Therefore, ἑλληνισμός, whereof σαφήνεια is a feature, is nothing but the linguistic 'norm'.[18] The important question arises, whether this linguistic norm was defined on empirical grounds (that is, by defining what actually sounded 'right' or 'wrong') or on the theoretical grounds of grammatical and philosophical speculation. We shall come to this later on.

Somewhere in the late 2nd or in the first half of the 1st century BC, a 'Demetrius' also discussed clarity at length in his treatise *De Elocutione* (sections 192–203).[19] Dionysius of Halicarnassus is constantly concerned with issues of clarity, too. Clarity is a quality he is particularly pleased to find in Lysias, and he often blames Thucydides because of his obscurity, among other things.[20] On the Latin side Quintilian devotes the second chapter of the eighth book of the *Institutio Oratoria* to *perspicuitas*. His discussion of the subject can be regarded as a *summa* of the Greek and Roman tradition.[21] At a lexical level, he maintains, *perspicuitas* is given by choosing the right word (*verbum proprium*, ὄνομα κύριον) for the right concept.

16 See Probert (2011).

17 Atherton (1993): 136–9.

18 Baratin-Desbordes (1987): 43–5. Such positions, incompatible as they were with any development of the *ornatus*, were soon surpassed in both Greece and Rome. Atherton (1993): 90–2. On Stoic grammar, in particular on the concept of ἀκολουθία, see also Sluiter (1990): 13–25.

19 The dating of the treatise has been widely debated, see Innes (1995). Here I accept the conclusions of Diehle (2007).

20 E.g. D. H. *Th.* 24.360–364 and *Amm.* 2, cf. De Jonge (2008): 7.

21 Cf. Kennedy (1963): 11–12, 275–6, 294, 315. Lausberg (1998): 218–20, 240–50, 274–319, 466–7. Kirchner (2007): 183.

Inappropriate synonyms, obsolete words, neologisms, regionalisms, jargon, and tropi (enigmatic substitutions of words for one another, metonymy, etc.)[22] all add to *obscuritas*. At a syntactic level, *perspicuitas* can be disrupted by excesses in *transmutatio* (change in word order, as with anastrophe and hyperbaton), *detractio* (omission of an element from the sentence, as with ellipsis, asyndeton, and zeugma) and *adiectio* (addition of an element). The negative effect of these figures on *perspicuitas*, however, is compensated by their positive effect on *ornatus* and on *aptum* (πρέπον, the 'harmony' of the parts).[23] The excesses to be avoided are *mixtura verborum* (syntactic chaos resulting from multiplied hyperbata, *Inst.* 8.2.14.), excessive *detractio* ('*cum sermoni deest aliquid, quo minus plenus sit, […] obscurae potius quam inornatae orationis est vitium*', 8.3.50, cf. 1.5.40) or inconvenient periphrases (excessive *adiectio*, 9.3.46). Sentences must not be too long, and hyperbaton must not unnaturally delay the end of a sentence. *Amphibolia*, that is syntactic ambiguity, also adds to *obscuritas*.[24] Long *interiectiones* must also be avoided (*Inst.* 8.2.15), since they would make a passage unclear (*'interiectione* […] *impediri solet intellectus'*). *Interiectio* is commonly translated as 'parenthesis'. Parenthesis is an "elastic concept"[25] even in modern linguistics, and it can be given a broad and a narrow definition.[26] Apart from main or coordinate clauses inserted within another clause,[27] broadly defined parentheses include a vast range of clause types. Among others, non-restrictive relative clauses, clausal adjuncts (that is, subordinate clauses that behave as adjuncts rather than as arguments of the superordinate verb, such as *'as you probably know'*), elliptical clauses, appositions, vocatives, and interjections have all been regarded as instances of parenthesis.[28] In a narrow sense, instead, parentheses are defined as "syntactically complete and

22 Lausberg (1998): 248–50.
23 Lausberg (1998): 242.
24 *Inst.* 7.9.6–15.
25 Schneider (2007): 3, 21, cf. Kaltenböck (2005).
26 Cf. Schwyzer (1939).
27 See Dehé-Kavalova (2007a): 6–7 for the status of short 'comment clauses'.
28 Kaltenböck (2005): 26–7. Cf. Devine-Stephens (1994): 416, Ziv (1985): 181, Dehé-Kavalova (2007a): 1–4. A broad definition is also adopted by Hoffman (1998): 230.

autonomous sentence[s] interrupting the syntactic coherence of another sentence".[29] Neither definition applies to what Quintilian calls *interiectio*.[30] In order to exemplify an undue use of this figure, he quotes the following passage from the *Georgics* (3.79–83):

> nec vanos horret strepitus. illi ardua cervix
> argutumque caput, brevis alvus obesaque terga,
> luxuriatque toris animosum pectus. honesti
> spadices glaucique, color deterrimus albis
> et gilvo. tum, si qua sonum procul arma dedere,
> stare loco nescit.

Quintilian remarks that too many details are added between *'nec vanos horret strepitus'* and '*tum si qua sonum procul etc.'* We would call this a 'digression' rather than a parenthesis:[31] a feature of discourse rather than of syntax.

All the ancient rhetorical works I have mentioned describe what makes speech clear and what does not. More interestingly, some of them give examples of what their authors considered obscure constructions. Dionysius of Halicarnassus often rewrites entire passages in a clearer style than the original ones, in order to highlight what he thinks to be wrong with them. This is the method of *metathesis*, which had been used both for didactic purposes and in literary criticism since the early 4th century BC[32] (see 4.3).

If we wish to turn the remarks we find in these sources into a set of well defined linguistic features, we will encounter similar problems to those we would have with the remarks of modern scholars. Both ancient and modern remarks on clarity and

29 Schneider (2007): 7, 21–2.

30 Narrowly defined parentheses correspond to what Quintilian calls *interpositio* or *interclusio* (9.2.23). By these terms he translates the Greek words παρένθεσις and παρέμπτωσις respectively. Whereas παρένθεσις refers to intentional insertions for rhetorical purposes, παρέμπτωσις refers to involuntary, casual insertions, as the etymologies of these two terms show. No mention of their effect on *perspicuitas* is made: Quintilian (9.2.27) only describes them in terms of effectiveness as rhetorical figures of thought, see Schneider (2007): 19–20, 34, Schwyzer (1939): 4–6.

31 Schwyzer (1939): 6–7 equates this figure to Greek παρεμβολή or ἐπεμβολή, cf. Lausberg (1998): 891–2.

32 De Jonge (2008): 367–90.

obscurity are more stylistic than strictly linguistic. Just as modern ideas are mostly based on an acquired feel for a dead language, ancient discussions seem to rely on a native speaker's feel for the language. For example, both Aristotle and Demetrius advocate concision and the avoidance of verbiage (ἀδολεσχία), but at the same time, they remark that short *cola* and concision itself can sometimes hinder comprehension.[33] Συντομία is also recommended by the *Rhetorica ad Alexandrum*, but this treatise draws a line where clarity comes into play: one should omit as many pieces of information and words as possible, only retaining those which are necessary for the text to remain comprehensible (30.8). As Dionysius of Halicarnassus puts it, brevity can lead to obscurity (*Th.* 24), just as excessive length. It must have been quite obvious for an ancient rhetorician where the threshold between being concise and being too concise was,[34] but how are *we* to decide? Sometimes we might feel justified in evaluating the clarity of Classical Greek texts starting from our own impressions, when we should feel that they coincide with the

[33] Arist. *Rh.* 1409b 17–32, 1414a 25–6, *Rh.* 1406a 32–5, Demetr. *Eloc.* 4 and 197. Cf. also Quint. *Inst.* 9.4.125. The first of these passages is drawn from Aristotle's discussion of the 'period', on which see Kennedy (1991): 239, Fowler (1982), Adamik (1984), and Fleming (2006), all with further references, and below, at 5.2. In general, a 'period' must have such a length as to be 'easily encompassed at a glance' (εὐσύνοπτον, *Rh.* 1409a 36–b 1). It has been argued that εὐσύνοπτον could be interpreted as a metaphor alluding to 'cognitive discernment' rather than actual ocular vision, Graff (2001): 30 and 40, n. 26, cf. Fowler (1982): 93, Adamik (1984): 186. This interpretation is quite plausible. How could a period be 'seen in its entirety' in scarcely punctuated texts, where a paragraphos only signalled that a sentence (not necessarily coinciding with a period) would end somewhere in the line under whose first letters it appeared? Moreover, in a preceding passage in the *Rhetoric*, Aristotle recommends that final fourth paeans (⏑⏑⏑–) are to be preferred to paragraphi or other scribal devices as sentence-end markers (1409a 19–21). It is questionable that "Aristotle rejects written punctuation as gratuitous", as Graff (2008): 28 puts it. I would rather read the passage (δεῖ τῇ μακρᾷ ἀποκόπτεσθαι, καὶ δῆλην εἶναι τὴν τελευτὴν μὴ διὰ τὸν γραφέα, μηδὲ διὰ τὴν παραγραφήν, ἀλλὰ διὰ τὸν ῥυθμόν) as stating that the end of a sentence must be recognizable simply by its rhythm, and that punctuation marks and all other visual devices are *insufficient* (but not redundant) for this purpose, as they would be available to the readers *alone*, cf. Adamik (1984): 187. By contrast, metrical *clausulae* are an aural device, sought for the benefit of the hearers in the first place. How would the non-metaphorical interpretation of εὐσύνοπτον be consistent with Aristotle's support for aural, rather than visual, sentence-boundary markers?

[34] Cf. Dover (1997): 40.

opinions held by ancient rhetoricians and commentators. In some cases, it seems that such opinions are based on genuine *empirical* impressions. For instance, when Aristotle says that short *cola* 'make the hearer stumble' (*Rh.* 1409b 17–18), we can assume that he describes the effect of this linguistic feature as he perceived it himself. Another possibility is that remarks on difficulty belong in specific theories of rhetoric or language and are based on precise *ideological* positions. The study of language was hardly ever pursued for its own sake. As is the case with the Stoics, for instance, it could be a division of systematic philosophy.[35] Both in cases like this and in rhetorical handbooks, which were aimed at the practical instruction of public speakers, it is possible that interpretations of empirical facts were framed in such a way as to fit a theory or specific didactic purposes. Demetrius (*Eloc.* 192–4), for instance, remarks that the 'unconnected' style (τὸ ἀσύνδετον καὶ διαλελυμένον) is obscure, arguing that this is the very reason of the obscurity of Heraclitus. On the other hand, he asserts that this style is suitable for recitation and quotes as an example a line of Menander (fr. 685 Koerte), which is anything but obscure (and is not described as such by Demetrius): ἐδεξάμην, ἔτικτον, ἐκτρέφω, φίλε. The real point Demetrius makes here is that such stylistic devices should be avoided by those who wish to compose in a plain way, which is the subject of this part of his treatise. The 'unconnected' style does not automatically lead to obscurity, even though it may well contribute to it, as is the case with Heraclitus. It appears that Demetrius *overstates* the cognitive effect of a certain way of writing in order to make a stronger claim and to make his own precepts more persuasive.

In the end, if we aim to reconstruct what sounded clear or unclear to native speakers of Classical Greek, ancient witnesses can be used so long as they provide *precise examples* of what sounded clear or unclear, regardless of any generalization they attempt, or of any explanation they try to provide. Theoretical discussions are often based on some *a priori* ideological position rather than thorough empirical observation. For instance, when Dionysius describes natural word order he introduces an iconicity principle: the chronological order of the events described

[35] Cf. Sluiter (1990): 16.

must be mirrored by the order of words (D.H. *Isoc.* 12). The same idea is stated in the *Rhetorica ad Alexandrum* (30.6): in order to achieve 'factual' clarity, the events must be presented in chronological order, without leaving any topic hanging. Conversely, as far as word order is concerned, Demetrius (*Eloc.* 199) seems to suggest principles which are ultimately based on pragmatics, as De Jonge has pointed out.[36]

Clarity and obscurity are not merely features of style, but they mostly pertain to cognition. The surface appearance of linguistic constructions influences how they are processed. In other words, style affects comprehension. Namely, style is obscure when it upsets comprehension. As a consequence, the assessment of clarity or obscurity cannot be a matter of stylistic analysis: linguistics structures must be interpreted in such a way as to reconstruct how they were processed by native speakers. This can be done in the light of modern psycholinguistic research.[37] Of course, we cannot perform experiments on native speakers of a dead language. Research in language comprehension has generally focused on English,[38] and some theories that account well for the comprehension of English are often challenged when other languages are taken into account.[39] As a consequence, we should only use experimental results which show cross-linguistic validity and support language-independent models of how linguistic comprehension works. In particular, the results of research on languages that share some significant typological features with Classical Greek, such as rich morphology, free word order,[40] and the possibility of head-final phrases[41] will be particularly suitable. In this respect, studies on languages

36 De Jonge (2008): 315–18, De Jonge (2007).

37 Hoffer (2007) attempted a similar approach, but the scientific literature he bases his argument on only consists of *one* paper dating back to 1993. Unsurprisingly, he sometimes comes to opposite conclusions (in particular at pp. 301–3) to those presented here.

38 Hawkins (2007): 104.

39 A significant case in Konieczny (2000).

40 Devine-Stephens (1999): 143.

41 In Classical Greek both head-initial and head-final constructions are possible. However, in domains such as adjective-noun phrases a modifier-head order seems to be preferred. See Mathieu (2004): 297, Mathieu-Sitaridou (2005): 240.

like German, Finnish,[42] or Japanese will be particularly valuable for our purposes. This, however, needs one further assumption, namely that human language processing works in the same way for contemporary speakers of any language as it did for ancient speakers of Classical Greek. One might object, for instance, that in a semi-literate culture, such as that of classical Greece, memory was much better trained than in contemporary, fully literate cultures, which would correspond to some difference in cognitive skills. If we assume that this was the case, we will have to understand to what extent memory is involved in language comprehension. Scientific research has found that working memory[43] is not a crucial factor and is only involved in the processing of unusual or ambiguous structures: short-term memory patients have no remarkable difficulties in understanding 'normal' sentences.[44] On the other hand, language comprehension seems to require the retrieval of long-term memory contents, namely semantic categories.[45] We might wonder whether the Greeks were more skilled at retrieving semantic information from their long-term memories due to their alleged advantageous mnemonic skills. First of all, we should ascertain whether their memories were actually better than those of modern Western literates. It is certainly true that the 'aural' Greek society of the 5th century BC relied on memory to a much greater extent than modern Western societies do. What must not be taken for granted, however, is that the practice of memorization in oral societies makes people develop particular cognitive skills that literates lack: in Rosalind Thomas' words, "people in oral societies […] have better devices or mechanisms for remembering, which is an entirely different thing".[46] Anthropologists and psychologists have found that ease of memorization in oral societies depends on specific contents and tasks.[47] It has also been found that

42 Hyöna-Vainio (2009), Kaiser-Trueswell (2004), cf. Sekerina (2003).

43 That is, "the set of cognitive processes involved in the temporary storage [short-term memory] and manipulation of information", Gathercole (2008): 33–4.

44 Gathercole (2008): 38, cf. Friedmann-Gvion (2003).

45 Was-Woltz (2007), cf. Traxler et al. (2005), Alloway-Gathercole (2005): 272, 279.

46 Thomas (1989): 4, cf. Small (1995), Small (1997): 4–5. See Rubin (1995) for a detailed study of oral traditions from the point of view of cognitive psychology.

47 Scribner-Cole (1981): 138.

people whose school education was based on memorization do not perform significantly better in memory tasks than other literates, the main divide being that between all literates and illiterates. Trained 'memorizers' only did better in such specific tasks as recalling the order of the words in a sentence. This skill, however, was not transferred to generic serial recall, that is, the ability to recall items of a list in a given order.[48] This ability is an effect of schooling and of literacy, and we can assume that schooled fifth-century Athenians might have developed it as well. Serial recall is linked to long-term memory lexical (semantic) representations,[49] which, as we have seen, play a role in speech comprehension. However, it is still unclear how these systems interact.[50] Therefore, the only conclusion we can draw is that ancient Greek schooled individuals could access the semantic properties of words quite efficiently. As we shall see, this should not affect the models of speech comprehension that will be applied in this study.

4.2 Assessing difficulty

4.2.1 Language comprehension: overview and methodological problems

Understanding language is a cognitively complex task. When we hear or read a sentence, information is gathered from many different sources:[51]

— The words activate mental lexical representations, in which their meanings and some of the possible syntactic relations they allow are stored.[52]

— The constituents are detected and the syntactic hierarchical structure of the sentence is parsed and given a semantic interpretation.

— A relationship is established between words and referents.[53] A *referent* is "an entity that has a spatio-temporal location so that it can later be referred to with an anaphoric expression, such as a pronoun for noun phrases (NPs), or

48 Scribner-Cole (1981): 221–33, 125.
49 Hulme et al. (2003).
50 Allen-Hulme (2006).
51 Warren-Gibson (2005): 751–2 with further references.
52 Traxler-Tooley (2007): 63.
53 Clark-Murphy (1982): 288.

> tense on a verb for events".[54] In order for communication to be successful, the referents brought in by the sender must be univocally identified by the receiver. Such identification is only possible if the referents are 'accessible' to the receiver. The *accessibility* of a referent depends on the information the sender and the receiver share about three types of context: general world knowledge,[55] physical surroundings and discourse (previous linguistic material).[56] The referential properties of a sentence have been shown to play an important role in language comprehension.[57]

Different theoretical models have been developed to explain and describe how sentence processing works and how these types of information (lexical, syntactic, referential) interact with each other in language comprehension.[58] These models generate predictions as to the processing difficulty induced by specific linguistic structures. Such predictions are tested by means of experiments which allow observing and measuring the difficulties experienced by the participants. According to how each experiment is designed, measurements account for either *on-line* or *off-line* processing.[59] In off-line experiments, participants are presented with entire sentences, which they can read at their own pace, and they are subsequently tested for comprehension. In on-line experiments, instead, participants are presented with *one word at a time*. This input can be either auditory (an audio recording of a sentence is played) or visual (words are displayed on a computer screen one at a time; in self-paced experiments participants can manipulate the pace of the presentation, otherwise words change on the screen automatically after a predefined time). In on-line experiments, the difficulty of specific parts of the linguistic input is mainly

54 Gibson (1998): 12, with further references.

55 Clark-Murphy (1982).

56 Ariel (1988): 68.

57 Kaiser-Trueswell (2004), Warren-Gibson (2002). Semantic categories relevant for accessibility hierarchies and deriving from general world knowledge (e.g. animacy) are stored in long-term memory, cf. Traxler et al. (2005): 216.

58 Surveys of such theories (*interactive models*) in Levy (2008): 1127–8, cf. van Gompel-Pickering (2007): 292, 301.

59 Konieczny (2000).

measured in two ways. One possibility is to measure the activity of the brain while the participant accesses the sentence and to detect ERPs (event-related potentials), that is, electric responses of the brain in correspondence to specific stimuli. Specific types of processing difficulties are related to specific types of electric signals. With visual presentation eye movements are measured instead: the longer a participant fixates a word (*reading time*), the higher is the cognitive activity (and the processing difficulty) associated with that word. It is evident that on-line difficulty is a *dynamic* property, which cannot be calculated for a sentence as a whole but varies throughout its constituents. The on-line experimental condition is much closer to oral communication, which makes the findings in this field applicable to this study.

As I mentioned, some advanced language comprehension models aim not only at *explaining* why and under what conditions the observed comprehension difficulties occur, but also at developing more or less ambitious mathematical models to *predict* reading times for every word in a sentence.[60] Comparing such predictions with actual reading times is the most straightforward way to assess the validity of models and their theoretical grounds. In the absence of an experimental benchmark, it is out of the question that we attempt to apply any mathematical model to Attic texts.

4.2.2 Sentence processing

When we hear or read a sentence, comprehension starts as soon as the first word is perceived. We start interpreting the syntactic, pragmatic, and referential structures before the sentence (or a phrase) has been perceived in its entirety.[61] In fact, language comprehension is an *incremental* process: as each word is encountered, either in reading or listening, we tend to maximize the degree of interpretation.[62] As a part of this process, we try to *integrate*[63] every new word into a mental representation of the hierarchical relations within the sentence as soon as possible. The simplest way in which such relations can be described is in terms of

60 E.g. Levy (2008).

61 Dąbrowska (2004): 23 calls this 'shallow processing'.

62 Schlesewsky-Bornkessel (2004), van Gompel-Pickering (2007): 289, Levy (2008): 1129.

63 Warren-Gibson (2005): 753, cf. Gibson (2000): 102–5.

dependencies. In this study, I shall adopt as a *descriptive* framework Igor Mel'čuk's dependency theory,[64] which is often used in experimental studies, especially due to its effectiveness in representing syntactic structures without altering the actual linear order of the sentence in the representation. This, of course, is particularly desirable when describing relatively free word order languages such as Classical Greek. Of course, hierarchical structures could be described applying other formalisms, such as context-free grammars (parse trees).[65] Miller has shown that all structural descriptions based on a dependency grammar can be turned into descriptions based on a context-free grammar given an appropriate interpretation function.[66] This means that, given the same structure, a description in terms of dependencies can be univocally translated into one in terms of constituency. In this study, I will represent dependencies graphically as arcs which connect each governor to its satellites. The direction of the dependency is shown by an arrow. Arcs must be traced in such a way as to minimize the crossings between one another.[67]

Going back to sentence processing, as a word is encountered, it sets up expectations for other elements to occur at some point in the sentence and satisfies expectations set up by previous words or the discourse context.[68] Let us consider the sentence *'The mouse bites the cheese'*. Its structure can be represented in a dependency graph:



As we process the determiner *'the'*, we predict that a noun (its governor) will follow at some point, either immediately, or for example, after one or more attributes.[69] At the same time, we predict that a finite verb will occur, in order to build up a complete sentence together with the noun (and govern it). If it occurred immediately after

64 Mel'čuk (1988), Mel'čuk (2009). See Appendix 2.

65 Levy et al. (2012): 12.

66 Miller (1999): 21–4.

67 As in Mel'čuk (1988).

68 Konieczny (2000): 628.

69 As Elizabeth Koier pointed out to me in a private note, since *'the'* is a definite article, one would also expect that the referent designated by the noun should be generally known or already mentioned in the previous discourse context.

'the', a finite verb would be unexpected and hard to process. As *'mouse'* is encountered, the expectation for a noun is satisfied. This noun also narrows down the range of verbs which could complete the sentence. Such verbs must refer to actions which can be performed by mice in the specific discourse context the sentence is part of. *To bite* falls into this category, and as a consequence, *'bites*' is unsurprising and easy to process. Conversely, a verb form like *'sings'* would have been harder to process. However, this would not be the case if this sentence occurred in a fictional story where humanized mice could sing.[70] *To bite* is a transitive verb, but it does not always require an explicit direct object. The expectation for one can be determined both by the discourse context (for example, after a sentence like *'the bee stings'*, *'the mouse bites'* will be easily considered a complete grammatical sentence, and a direct object would not be expected) and by different types of intonation.[71] If the sentence is taken in isolation and without explicit prosodic information, as it is here (unless one should read this study aloud), the expectation for a direct object to follow or not to follow depends on the frequency of each word order pattern in natural language. Word order patterns can be defined in either *structural* or *collocational* terms.[72] Structural descriptions focus on the syntactic properties of the words each pattern consists of. Possible structural descriptions of a phrase like *'nice person'* would be 'modifier + head', or 'modifier adjective + head noun', or 'modifier adjective + head animate singular noun', or 'adjective modifying *person*',[73] or '*nice* modifying noun', '*nice* modifying *person*', and so on. Collocational descriptions, instead, simply focus on the exact sequence of the words or word classes: *'nice person'* would be described as '*nice* + *person*' or as 'adjective + noun', with no reference to the hierarchical relationship between the words. Experimental research supports the idea that expectation in language processing is determined by the frequency of *structures* more than collocations.[74] It has been claimed that expectation

70 Nieuwland-Van Berkum (2006), cf. Roland et al. (2012).

71 DeDe (2010).

72 Levy et al. (2012): 15–16.

73 This way of describing patterns reflects the linear order of the phrase: *'A* modifying *B'* implies that *A* precedes *B*. If *B* preceded *A*, I would write *'B* governing *A'*.

74 Levy et al. (2012).

also depends on the grammatical and syntactic possibilities of a language:[75] however, these underlie language *production*, and therefore they might ultimately determine the frequency of certain patterns. Incidentally, one of the views of *usage-based* linguistics is that grammar itself emerges from usage (Emergent Grammar).[76]

Going back to the example sentence, we can determine whether *'bites'* sets up the expectation for a direct object in probabilistic terms. According to the *surprisal hypothesis*[77] highly expected words are easy to process and their integration is fast, whereas unexpected words are hard to process. The expectedness of a word in a specific positions in the linear order is related to the frequency of the structure it belongs to in the readers/hearers' linguistic experience.[78] In our case, for example, one should calculate the probability of a noun (*'mouse'*) following the article (*'the'*) by which it is determined, the probability of a verb (*'bites'*) following a noun—its subject—following an article, the probability of an article (*'the'*) following a transitive verb preceded by its subject determined by an article, and the probability of a noun (*'cheese'*) representing the direct object of a transitive verb, determined by an article, following a transitive verb preceded by its subject determined by an article. These probabilities represent the 'surprisingness' of each word. Such probabilities must be computed starting from the frequency data extracted from a corpus which should represent well the 'standard' linguistic experience of a native speaker.[79] Ideally, corpora of this kind should be both representative (they should include as many linguistic varieties as possible) and balanced (the amount of text representing each variety should correspond to the proportion of each variety in real-life 'standard' linguistic experience).[80] This is quite ambitious, not to say an abstraction, even for modern languages. If we were to design a corpus of this kind for Attic, the

75 Bornkessel et al. (2002), which is seriously flawed, as shown by Kempen-Harbusch (2003).

76 See Tummers et al. (2005) for a review of these trends in linguistics.

77 Levy (2008).

78 Cf. Dąbrowska (2004): 25–6.

79 Levy et al. (2012): 15–16, cf. Levy (2008): 1145–6. Of course, linguistic experience might vary across different individuals, due both to their innate ability and to learning, Wells et al. (2009).

80 On these concepts see Hunston (2008).

difficulties we would incur would be even more serious. Whereas the modern language corpora that are normally used in frequency investigations include (as they *must*) records of spoken language, all the Attic we have is literary or epigraphic. Even if we decided to make do with what Slings calls 'quasi-spoken Attic', much of it consists of metrical texts (comedy), which, as a matter of principle, may constrain word order in ways which would not be common in natural language. Moreover, our literary canon is *per se* a selection and would only include a limited number of linguistic varieties, and there is no reason to assume that those varieties are represented in a balanced way. The specific contents of the surviving Attic texts correspond to a limited set of registers, which undermines the representativeness of the corpus.[81] In short, a corpus based on Attic literature and inscriptions would be helplessly inadequate. In most cases, when working on Attic, we will have to assess the expectedness of structures based on the grammatical possibilities of the language. Incidentally, descriptions of the Attic grammar are ultimately based on literary language, that is, on the very corpus of texts that I find inadequate for a frequency study.[82] This represents an important limitation: we *cannot* apply a computational model to the study of Attic, nor can we calculate numeric difficulty predictors which we should expect to be correlated to the empirical values we would obtain, if only we were able to perform comprehension experiments on native speakers of Attic. If we were to assess the expectedness of τὸν τυρόν in ὁ μῦς δάκνει τὸν τυρόν, we would only be able to say that, since the verb is transitive, it would not be surprising to encounter a direct object in the accusative immediately after it, and we could also assume that a native speaker would have signalled that the utterance was not complete with δάκνει by means of intonation (see 4.2.7).

Researchers have found that another source of difficulty in language comprehension is the distance between the constituents in syntactic relationships (*locality* effects). In syntactic parsing, the integration of two elements that depend on one another is more effective if the elements are close to each other in the linear order of the

[81] Biber et al. (1998): 30–5.

[82] Slings (1992): 100.

sentence. When the second element is encountered, the first one must be *retrieved* from working memory, but long distances might cause it to *decay*.[83] Locality effects are sensitive to referential information: the more accessible the referents, the less troublesome the retrieval.[84] The retrieval can also be disrupted by the *interference* of elements similar to those that must be integrated together.[85] For example, in a sentence like *'The worker was surprised that the resident who said that the warehouse was dangerous was complaining about the investigation'*, when the verb '*was complaining*' is encountered, the subject *'the resident'* must be retrieved. The verb provides cues for retrieval: the subject is identified by a grammatical case, a thematic role and semantic and referential properties. Between the subject and the verb, however, the noun phrase *'the warehouse'* intervenes. The grammatical and syntactic properties of this noun phrase overlap with those of the real subject and interfere with its retrieval. If the similarities between the subject and the intervening noun phrase were extended to semantics (for instance, should the intervening phrase be *'the neighbour'* instead of *'the warehouse'*), the effect of interference would be even stronger.[86]

The effects of locality show much more substantially in off-line than in on-line experiments. When readers are asked to rate the acceptability of sentences, sentences with short dependencies score higher than those with long dependencies. According to the *difference hypothesis*, when they perform this task, readers subconsciously generate sentences with the shortest dependencies possible. As they compare them with those showing longer dependencies, they tend to prefer the short version, which results in the low score for such sentences.[87] This means that locality affects language *production* more than *processing*: longer dependencies imply

83 Gibson (2000): 95–6. Cf. Hawkins (2007).

84 Warren-Gibson (2002): 103–4, Kaiser-Trueswell (2004): 140–1, Traxler et al. (2005): 216.

85 Warren-Gibson (2005): 754–5, Fedorenko et al. (2006), Gordon et al. (2006), cf. Martin-McElree (2009).

86 Van Dyke (2007) with further references for interference theories.

87 Konieczny (2000): 643–4.

higher memory cost, which hinders on-line production.[88] In on-line comprehension, locality effects are generally weaker than anticipation effects.[89] If an element is anticipated early in the sentence, the expectation for it becomes higher as more elements intervene. When a syntactic element of a certain type occurs, the expectation for another element of the same type in the same clause decreases. As a consequence, the range of element types that might occur narrows down, and the expectation for any possible but not yet encountered type grows.[90] For instance, when a reader or hearer encounters the subject of a clause, the expectation for another subject is eliminated, and expectation for a verb arises, as we have seen. If other elements occur between the subject and the verb, the expectation increases as each of them is encountered. The more numerous the constituents, the faster the verb is eventually processed, which is quite the opposite of what locality predicts. It is not necessary that the constituents intervening between the subject and the verb should be arguments of the verb. If this were the case, this would increase the possibility that readers or hearers predict the identity of the verb, but it has been shown that they rather predict its location alone.[91]

In some domains, however, the effects of retrieval processes seem to prevail over those of anticipation. In general, anticipation applies to local dependencies, but longer dependencies, especially when discontinuity is involved,[92] seem to be subject to locality. For instance, a sentence like *'the coach smiled at the player tossed the frisbee'* is harder to process than *'the coach smiled at the player thrown the frisbee'.* The sentences correspond exactly to one another from a structural point of view: from the point of view of anticipation (and probability), they should score exactly the same. However, *'thrown'* is unambiguously a past participle, whereas *'tossed'* could be both a past participle, as is the case, or a past tense. The higher difficulty of the sentence with *'tossed'* shows that this is exactly how it might be interpreted by some

88 Hawkins (2007).
89 Nakatani-Gibson (2010): 107, Konieczny (2000), cf. Friedmann-Gvion (2003): 35.
90 Levy (2008): 1146.
91 Levy (2008): 1149–50.
92 Levy (2005): 142.

readers or hearers, and this is due to the *nearness* of *'the player'*, a very plausible subject for the verb *to toss.*[93]

Let us turn back to Greek and consider an example from Demetrius. At *De Elocutione* 198, he rewrites a sentence of Xenophon (*Anab.* 1.2.21):[94]

> καὶ ὅτι τριήρεις ἥκουεν περιπλεούσας ἀπ' Ἰωνίας εἰς Κιλικίαν Τάμον ἔχοντα τὰς Λακεδαιμονίων καὶ αὐτοῦ Κύρου (X. *Anab.* 1.2.21)
> 'And that he heard that Tamos was commanding triremes which were sailing around from Ionia to Cilicia, those which belonged to the Lacedaemonians and to Cyrus himself'

The result is:

> τριήρεις προσεδοκῶντο εἰς Κιλικίαν πολλαὶ μὲν Λάκαιναι, πολλαὶ δὲ Περσίδες, Κύρῳ ναυπηγηθεῖσαι ἐπ' αὐτῷ τούτῳ. ἔπλεον δ' ἀπ' Ἰωνίας· ναύαρχος δ' αὐταῖς ἐπεστάτει Τάμος Αἰγύπτιος (Demetr. *Eloc.* 198)
> 'Triremes were expected in Cilicia, many Laconian and many Persian, built for Cyrus for this very purpose. They sailed from Ionia; in charge of them as a commander there was Tamos the Aegyptian'

Let us try to reconstruct a dynamic, word-by-word parsing of Xenophon's version of the sentence he works on. The conjunctions καὶ ὅτι require a verb, and so does τριήρεις. Ἤκουεν satisfies these expectations. Since this verb is in the third person singular, it disambiguates τριήρεις, revealing that it is an accusative. Now, ἀκούω can

93 Levy (2008), cf. Nakatani-Gibson (2010): 108.

94 The passage reads: παράδειγμα πλαγίας λέξεως καὶ διὰ τοῦτο ἀσαφοῦς τὸ παρὰ Ξενοφῶντι, οἷον [*quotation*]. τοῦτο γὰρ <ἂν> ἐξ εὐθείας μὲν ὧδέ πως λέγοιτο· [*metathesis*]. μακρότερον μὲν οὕτως ἐγένετο ἴσως, σαφέστερον δέ. I would tend to interpret πλαγία λέξις as 'dependent construction', by which I take Demetrius to refer to the participles which he eliminates in his *metathesis.* Compare *Eloc.* 104, where he rewrites the sentence ἡ δὲ γνώμη ἦν, ὡς εἰς τὰς τάξεις τῶν Ἑλλήνων ἐλώντων καὶ διακοψόντων (X. *Anab.* 1.8.10) as διενοοῦντο ἐλάσαι καὶ διακόψαι, cf. Lausberg (1998): 408. Instead, Rhys Roberts (1902): 299 interprets πλάγιος in a morphological sense, cf. Dickey (2007): 254. In this case, Demetrius might just recommend that one should avoid overusing oblique cases (which include the accusative), as he restructures the sentence so that both τριήρεις and Τάμον appear in the nominative. At *Eloc.* 201, however, he claims that no other cases but the nominative *and the accusative* ought to be used at the beginning of a sentence. Cf. Chiron (1993): 122–3.

govern a genitive of the direct source of the sound and an accusative of the thing or event about which one hears.[95] No article precedes τριήρεις, and it is not surprising that either a predicative participle or an infinitive should occur, specifying the event in which the undetermined triremes are involved. As a matter of fact, a predicative participle follows immediately, together with its adjuncts (περιπλεούσας ἀπ'Ιωνίας εἰς Κιλικίαν). From a syntactic and semantic point of view, this partially input sentence can be considered complete at this point. However, Τάμον follows, which might be surprising, and is left pending until ἔχοντα is encountered. This participle is the real governor of τριήρεις περιπλεούσας and depends on ἤκουεν. It appears that the partial analysis of the sentence up to Κιλικίαν was wrong, and all that part of the sentence must be *reanalysed* by the hearer or reader.[96] This is a cognitively demanding task, and this is why, we can argue, Demetrius found this sentence difficult.

There are a few more factors which one should take into account as facilitators of on-line sentence processing. One is syntactic and semantic parallelism, a common rhetorical device in Attic literature.[97] An experiment on German speakers showed that sentences like (2) and (3) are processed faster than those like (4):[98]

1. *Vor einer Stunde bezwang den Fechter* (accusative) *der Gegner* (nominative) *und gerade besiegt den Ringer* (acc.) *der Erzfeind* (nom.), *wie der Journalist schreibt*

   'An hour ago defeated the fencer (obj.) the adversary (subj.) and currently overwhelms the wrestler (obj.) the arch-enemy (subj.), as the journalist writes'

2. *Vor einer Stunde bezwang den Gegner der Fechter und gerade besiegt den Ringer der Erzfeind, wie der Journalist schreibt*

   'An hour ago defeated the adversary (obj.) the fencer (subj.) and currently overwhelms the wrestler (obj.) the arch-enemy (subj.), as the journalist writes'

3. *Vor einer Stunde bezwang der Fechter den Gegner und gerade besiegt den Ringer der Erzfeind, wie der Journalist schreibt*

95 Cf. Schenkeveld (1992): 130–1, Chanet (1988): 89.

96 See van Gompel et al. (2005) and 5.2 on reanalysis.

97 Cf. Gagarin (1999): 169.

98 Knoferle-Crocker (2009), cf. Sturt et al. (2010).

'An hour ago defeated the fencer (subj.) the adversary (obj.) and currently overwhelms the wrestler (obj.) the arch-enemy (subj.), as the journalist writes'

4. *Vor einer Stunde bezwang der Gegner den Fechter und gerade besiegt den Ringer der Erzfeind, wie der Journalist schreibt*
   'An hour ago defeated the adversary (subj.) the fencer (obj.) and currently overwhelms the wrestler (obj.) the arch-enemy (subj.), as the journalist writes'

The clauses in sentence (2) are syntactically parallel (accusative-nominative, accusative-nominative), while those in sentence (3) are semantically parallel (athlete-opponent, athlete-opponent). Sentences which show both syntactic *and* semantic parallelism (1) are processed faster than all other conditions.

Lastly, grammatical agreement is a facilitating factor in morphologically rich languages: in head-final constructions, the thematic role is assigned to the whole phrase as soon as the modifier is encountered. Agreement facilitates syntactic integration and is not affected by morphological transparency (the inflectional forms need not be similar to each other).[99]

4.2.3 Sentence length and word length

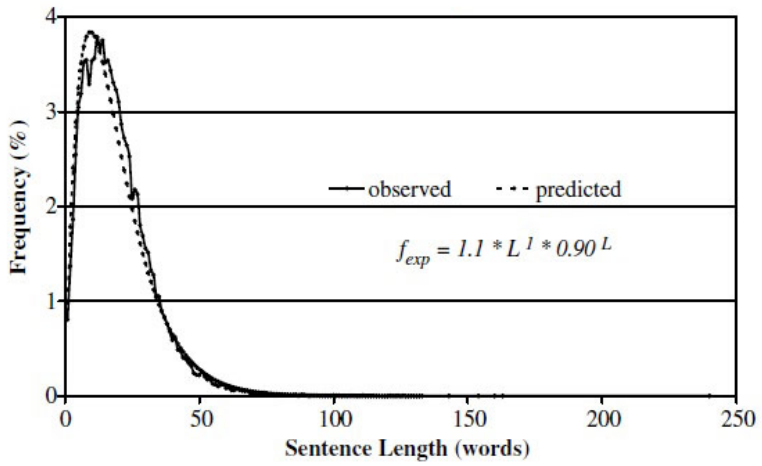
Long sentences consist of many words. Theoretically, a large number of constituents can be combined in a large number of ways, producing ambiguities and several candidate parses.[100] However, as we have seen, sentence comprehension is an incremental process. This rules out the idea that sentence length affects comprehension *per se*.[101] Long sentences can be obscure, just as any other utterance, due to other structural features. For instance, more words allow for more local ambiguities and longer dependencies, which might induce locality effects. Therefore, sentence length is not a significant feature as far as language comprehension is concerned. On the other hand, it has been regarded as a primary parameter in stylometrics together with word length, with which it is statistically

[99] Hyöna-Vainio (2009).

[100] Dąbrowska (2004): 11.

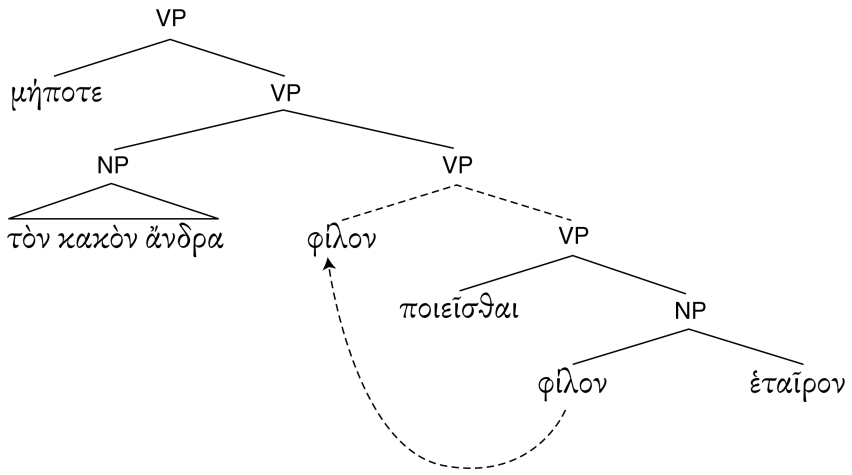
[101] Cf. Gagarin (1999): 170–1. Quintilian (*Inst.* 9.4.125) remarks that the members of periods must not be so long as to exceed the capacity of memory. It is not clear, though, if he is referring to the speaker's or the hearer's memory.

related, at least intra-textually.[102] Corpus studies have shown that sentence length frequencies tend to fit the same type of distribution across different languages: shorter sentences are more frequent, but very short sentences (< 3 words) are rare,[103] as shown in the graph below, which is based on the Brown corpus of English (from Sigurd et al. (2004): 50).



Sentence length is regarded as one of the parameters that define the so-called 'linguistic fingerprints' of an author and has been used for authorship attribution together with other quantitative measures (for instance, word length).[104] Taken independently, sentence length proved to vary significantly across discourse types (technical discourse, oral discourse, narration, etc.) rather than functional styles (literary, everyday, administrative, scientific, etc.).[105] On the other hand, word length (defined as the number of syllables per word) provides a criterion for genre discrimination rather than for authorship attribution.[106] A word length study has been performed on Ancient Greek, namely on *koine*. This study compared word length distributions in Epictetus and the New Testament and found a striking

[102] Grzybek et al. (2007), Grzybek et al. (2008).
[103] Sigurd et al. (2004), cf. Kelih-Grzybek (2005), Grzybek et al. (2008).
[104] Kelih-Grzybek (2005): 31, cf. Dover (1968): 107, Dover (1997): 45 with further references.
[105] Kelih et al. (2006).
[106] Kelih et al. (2005). Word length has nothing to do with processing difficulty, see Rummer et al. (2003): 562.



homogeneity. However, diachronic variation in word length distribution within the same language is a well established fact, and the results of the study cannot be extended to Classical Greek.[107] At any rate, research on word length does not fit the purposes of this study.

4.2.4 Syntactic discontinuities: hyperbaton

A figure of speech which is often regarded as a source of difficulty is hyperbaton, as some ancient commentators point out.[108] As Lausberg summarizes it, "*hyperbaton* jeopardizes the linguistic *perspicuitas*, and can thus lead to *obscuritas*, when it is complicated by syntactic conditions and when it is multiplied: the result is then a *mixtura verborum*".[109] Devine and Stephens, who describe the syntax of Classical Greek in terms of constituency, defined hyperbaton as the extraposition of a constituent from the phrase it belongs to.[110] In a sentence like μήποτε τὸν κακὸν ἄνδρα φίλον ποιεῖσθαι ἑταῖρον (Thgn. 1.113), φίλον ἑταῖρον is a noun phrase, from

[107] Egbers et al. (1997).

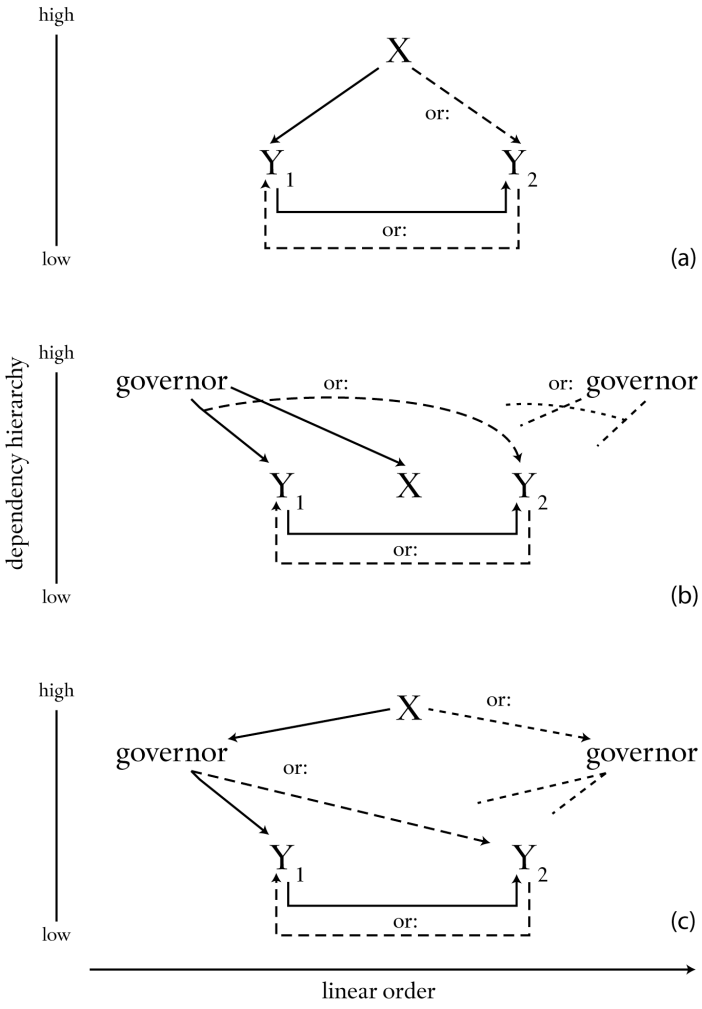
[108] Cf. *Rh.Al.* 30.7.5, Phld. *Rh.* book 4, col. XVIII (Sudhaus I, p. 160): [ἀσάφεια γίνεται] πρὸς δὲ τούτοις, ἃ καὶ παρά τισι τῶν τεχνογράφων κατακεχώρισται, διὰ τὸ καταπυκνοῦν τοῖς ὑπερβάτοις οὐκ οὔσης ἀνάγκης χρησιμεύειν ὑπολαμβάνοντας, ἂν δὲ ἀναγκαῖον ᾖ χρῆσθαι, μὴ βραχύτατον ὡς μάλιστα τὸν λόγον ποιεῖν, *Scholia in Pindarum, O.* 2.153 (ll. 85–6: ἐς δὲ τὸ πὰν ἑρμανέων χατίζει), b: ἤτοι περὶ τῶν ποιημάτων ἑαυτοῦ διαλέγεται· οἶδε γὰρ ὅτι πολλῇ ἱστορίᾳ κέχρηται καὶ σχήμασιν ἐξηλλαγμένοις καὶ φράσει ποικίλῃ· ἔχει γὰρ ὑπερβατὰ πολλά.

[109] Lausberg (1998): 319.

[110] Devine-Stephens (2006): 523. See Devine-Stephens (1999): 88–140 for a detailed functional classification of different types of hyperbaton.

which φίλον is extraposed. The constituent structure of this sentence is displayed in the graph at the top of the previous page, where the position of φίλον is represented in generativist terms as the result of movement.

In terms of syntactic dependency, hyperbaton can be defined as a sequence of two elements, one of which (head) governs the other (modifier), that are separated by one or more intervening elements. At least one of the intervening elements must be either (directly or indirectly) superordinate to, or a sister of, the head of the hyperbaton. These patterns are visualized in the graphs below. Following Devine and Stephens, I have labelled the elements according to their position in the hyperbaton. The intervening element is labelled X, that in first position is labelled Y_1, and the final one is labelled Y_2.



Graph *(a)* represents patterns with X as the direct governor of the head of the

hyperbaton. In graph *(b)*, X is a sister of the head of the hyperbaton, that is, they are governed by the same element, which can precede or follow the hyperbaton. In graph *(c),* X is superordinate to the head of the hyperbaton, but it is not its direct governor. The latter can precede or follow the hyperbaton.

Hyperbaton is one of the most frequent types of syntactic discontinuity in Classical Greek. Apart from Greek, hyperbaton is very common in Latin and is well attested in modern languages, especially in colloquial registers.[111] It is commonly assumed that the main function of hyperbaton is highlighting certain elements by left-extraposition. The marked element precedes the phrase it belongs to, thus receiving focus.[112] It has also been pointed out that hyperbaton in Classical Greek often rounds off syntactic units in both poetry and prose, and that it should be regarded as a resource for oral composition that was also exploited in writing as a discourse structuring device.[113]

In general, syntactic discontinuities are not necessarily hard to process. As we have seen, the effects of anticipation and agreement tend to prevail over those of locality: if distances in the linear order are not "unsuitably large", they are not a problem.[114] However, even in free word order languages, sentences have a strong tendency to remain *projective.* A sentence is projective if and only if *no dependencies cross each other* and *no dependencies span over the top node in the dependency structure.*[115] This is

[111] Mathieu (2004), cf. Fraenkel (1928): 165, Devine-Stephens (1999): 7–8, Levy (2005): 14 and Huck-Ojeda (1987). Such languages include French (*'Combien as-tu lu de livres?'*), most Germanic languages (e.g. German: *'Was sucht er für ein Werkzeug?',* Dutch, Swedish, Norwegian) and Slavic languages (e.g. Russian, Polish, Serbo-Croatian).

[112] Dik, H. (1995): 6–7, Mathieu (2004): 293–4, Devine-Stephens (1999): 35.

[113] Markovic (2006).

[114] Levy (2005): 142.

[115] See Mel'čuk (1988): 35–6, cf. Miller (1999): 22. Let us consider a subordinate clause. Its verb depends directly on the subordinator or some other element of the main clause. If some dependencies between other elements of the subordinate clause span over the verb, such dependencies will cross the one which connects the verb (the top node of the subordinate clause) to its governor. Analogously, all dependencies spanning over the top node of an independent clause (most often the main verb) are equated to crossing dependencies, even if no arcs should cross in the graph. We are only dealing with syntactic dependencies (as opposed to morphological and semantic dependencies), see Appendix 2 and Mel'čuk (1988): 105–49, Mel'čuk (2009): 10–40.

exactly what hyperbaton violates.

Non-projective sentences exist in many languages but are always marked in some respect.[116] As Levy et al. (2012) have pointed out, they are not difficult to process in themselves. If appropriate anticipation-inducing contexts are given, crossing dependencies have been shown to be as easily processable as projective dependencies. Their rarity (and subsequent markedness) in some languages seems to be due to the locality and interference effects they are very likely to induce. As we have seen, this is considered a constraint on linguistic *production*. If such structures are hard to produce, at least in some languages, they will not be produced often, and their potential comprehension difficulty will only stem from their rarity. In short, from the point of view of language processing, hyperbaton should not normally be difficult *per se*. As we have seen, the locality-related disadvantage of discontinuities can be overcome by anticipation, provided that the intervening elements do not cause interference effects (that is, they should not share morphological, syntactic or semantic properties with the second element of a hyperbaton). Head-final hyperbata (that is, those with the head in the Y_2 position) should be even more advantageous in this respect, since the head will be required by the modifier in the Y_1 position.

Nevertheless, we have seen that the ancient rhetorical tradition regards hyperbaton as a potential source of difficulty. An episode told by Plato shows how a hyperbaton could actually cause interpretation problems to native speakers of Classical Greek. A passage of the *Protagoras* (343c–e) describes Socrates and Protagoras as they comment on a poem of Simonides (fr. 37 Page):

> ἄνδρ' ἀγαθὸν μὲν ἀλαθέως γενέσθαι
> χαλεπὸν χερσίν τε καὶ ποσὶ καὶ νόωι
> τετράγωνον ἄνευ ψόγου τετυγμένον

Socrates argues that ἀλαθέως modifies χαλεπόν, which implies a hyperbaton (ὑπερβατὸν δεῖ θεῖναι ἐν τῷ ᾄσματι τὸ ἀλαθέως), rather than ἀγαθόν, which is closer in the linear order of the sentence: what Simonides means is that 'it is truly hard to become a good man', not that 'it is hard to become a truly good man' (or 'to truly

[116] Mel'čuk (1988): 36–8.

become, etc.'). This interpretation also helps explain the function of μέν, as Socrates says: it contrasts the concept that 'it is truly hard to *become* a good man' with the concept that 'it is hard to *be* a good man', which Simonides attributes to Pittacus, and disagrees with.[117] From the point of view of pragmatics, γενέσθαι is the focus, and as such it occurs before the verb (implied by predicative χαλεπόν).[118] Unfortunately the poem is fragmentary, and we do not know the exact wording of what followed this sentence. It is easy to imagine that this would be a contrasting statement introduced by δέ. On these grounds, we can argue that the type of focus γενέσθαι receives is contrastive. According to Devine and Stephens, Greek might have marked contrastive focus prosodically.[119] This means that if an ancient Greek *oral reader* wished to convey the meaning suggested by Socrates, he might have used prosody as a disambiguator (see 4.2.7 for a full discussion). Moreover, one must not forget that Simonides' poem was a sympotic song. In its original performance context, which evidently does not correspond to that of Plato's *Protagoras*, the intonation was constrained by the melody, which we do not possess. As to the metre, the first line is an 'encomiologicum', which in most cases can be analysed as an asynarteton (–⏑⏑–⏑⏑–‖⏑–⏑––, a dactylo-epitrite, D × e ⌒).[120] Here, however, there is no caesura at the end of the initial hemiepes, which falls after the first syllable of ἀλαθέως. Poltera places one between ἀλαθέως and γενέσθαι[121] (–⏑⏑–⏑⏑–⏑–‖⏑––, an ibycean followed by a bacchius), which seems to me to reinforce the idea that the infinitive could 'stand out' prosodically.

An example of dreadful *mixtura verborum* is found on the Latin side. Quintilian (*Inst.* 8.2.14) quotes a verse from the *Aeneid* to illustrate his point about undue hyperbaton:

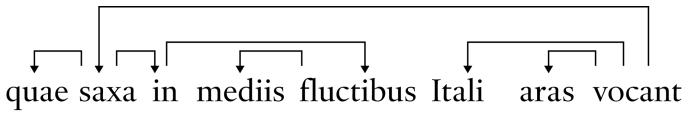
> *saxa vocant Itali mediis quae in fluctibus aras* (*Aen.* 1.109)
> 'Rocks in the middle of the waves, which the Italians call the Altars'

[117] On the interpretation of this fragment see Rusten (1986): 73.
[118] This matches Helma Dik's model, see Dik, H. (1995).
[119] Devine-Stephens (1994): 469.
[120] Rossi (1976).
[121] Poltera (2008): 456–7.

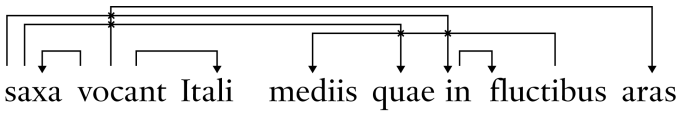
Servius' commentary reads:

> ordo est, *'quae saxa in mediis fluctibus Itali aras vocant'*. pro quibus hunc ordinem esse ait *'tris Notus abreptas mediis fluctibus in saxa latentia torquet'* [*Aen.* 1.108]. alii *'mediis <quae> fluctibus aras'* legunt, ut sit ordo *'saxa vocant Itali aras, quae mediis fluctibus'*, ut desit *'sunt'*.

Even ancient readers were not sure as to what the right structure (and meaning) was, and Servius reports alternative readings which removed *'in'* from this line. The dependency structure, according to Servius, is the following:

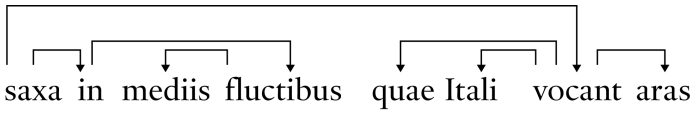


But, with the original word order, it looks like this:

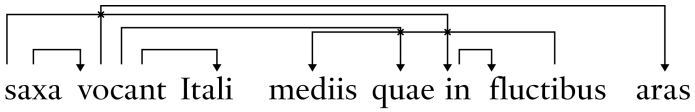


Here, the dependencies between *'saxa'* and its modifiers *'quae'* and *'in mediis fluctibus'* are non-projective. Moreover, a 'double' hyperbaton is determined by the position of *'mediis'* before both the governor of its governor (*'in'*, which governs *'fluctibus'*) and *'quae'*, an element at the same hierarchical level as *'in'* (a sister). One potential source of difficulty is the position of a relative adjective *after* the noun it modifies, which might be unexpected: as a matter of fact, the alternative reading takes *'quae'* as a relative pronoun introducing a verbless clause. *'Mediis'* raises the expectation for a noun in the ablative plural. This expectation is reinforced by *'in'*. The position of *'in fluctibus'* would make it liable to be parsed either as an element of the would-be relative clause introduced by *'quae'*, or as an adjunct of *'vocant'*. Moreover, when *'vocant'* is encountered, it is still ambiguous whether *'saxa'* is in the nominative or in the accusative: in literary Latin, rocks *can* speak (cf. for instance Cicero, *Arch.* 19: *'saxa atque solitudines voci respondent'*). When *'Itali'* is encountered, *'saxa'* must be reanalysed as the direct object of *'vocant'*.

Another interpretation of the structure of this verse would make the word order even more 'mixed up'. *'Saxa'* can be interpreted as an anaphoric apposition of *'saxa'* in the previous line (*'in saxa latentia torquet | saxa, etc.'*, cf. Vergil, *Eclogae* 10.72: *'Pierides, uos haec facietis maxima Gallo, | Gallo, cuius amor tantum mihi crescit in horas'*). *'In mediis fluctibus'* would still be a modifier of *'saxa'* (as if *'latentia'* were implied), and so would the relative clause *'quae vocant aras'*:[122]



This results in the following analysis of the actual word order:



If this interpretation were adopted, it would be wrong to consider *'saxa'* an argument of *'vocant'* altogether. This wrongly reconstructed dependency would have to be reanalysed upon encountering *'quae'*. This analysis makes it even more likely that *'in mediis fluctibus'* could be assigned to the relative clause instead of being interpreted as a modifier of *'saxa'*.

Either way, it is not surprising that Quintilian did not approve of this word order pattern. The amount of 'false parsings' and reanalysis that it would induce fully justifies his impression. In the end, Quintilian's criticism corresponds to an acceptability rating in an off-line comprehension experiment (see 4.2.2): as we have seen, this would make long dependencies seem even harder to process.

In conclusion, hyperbata should only be considered difficult if the syntactic discontinuity they entail determines ambiguities and induces hearers to build wrong analyses of partially input structures.

[122] Verbs of relative clauses are considered to be directly dependent on the antecedent and to govern the relative pronoun: the thematic role and syntactic function of the pronoun depend on the verb, and only its gender and number depend on the antecedent, cf. Mel'čuk (1988): 25–6 and Appendix 2, 2.2.

4.2.5 Sentence structure

Modern scholars often regard sentence complexity as factor in the understandability of texts. In particular, it is often taken for granted that parataxis is easier to process than hypotaxis[123] and that, in general, complexity can lead to obscurity.[124] Now, coordinated clauses, even in long chains, are frequent in spontaneous spoken language.[125] From a psychological point of view, this tendency might only prove that the *production* of paratactic structures is easier and more natural.[126] If *processing* is taken into account, the picture is quite different.

Experimental studies[127] on recall have found that subordination is more efficient than coordination: subordinate clauses are integrated with the main clause in a single memory chunk, whereas coordinate clauses are stored in separate chunks. I shall discuss the implications of this in Chapter 5. As far as processing is concerned, the integration of subordinate clauses in the syntactic structure of the superordinate (or *matrix*) clause seems to work in an analogous way to that of other constituents. Just as is the case with word order, the linear order of the clauses in the sentence can affect the integration process. Each subordinate clause can be embedded into the structure of the matrix clause in three positions:[128]

— initial: the subordinate clause occurs either before all words of its superordinate clause or directly after the initial subordinator or coordinator of its superordinate clause;[129]

123 Gagarin (1999): 169.

124 Allan (2007): 93.

125 However, they often seem to lose their semantic meaningfulness, and polysyndetic coordinators behave more or less as fillers, see Beaman (1984): 56–61.

126 Rummer et al. (2003): 545 with further references. Blänsdorf (1967) argues (ch. 1) that groups of 'parallel' subordinate clauses, with similar function, mood, and tense are quite common in the 'periodic' style of Plautus and must have resembled Latin 'Umgangssprache' quite closely. Such structures allowed a certain compactness in the expression of related concepts and would let the hearer mentally reconstruct the train of thought of the speaker.

127 Engelkamp-Rummer (2002), Rummer et al. (2003).

128 All definitions from Karlsson (2007): 367.

129 E.g. *'If I were you…'*. In a sentence like *'If, as people say, …'* the *as*-clause will be considered initial-embedded.

— central (*endotaxis*):[130] the subordinate clause has words of the superordinate clause both to its left and to its right;[131]
— final: the subordinate clause occurs after the last word of the superordinate clause.[132]

The tendency for some types of clause to occur in final position is often explained as being determined by iconicity.[133] For instance, in Classical Greek purpose clauses tend to follow the superordinate clause, but this is not at all a rule.[134] In general, iconicity primarily serves a pragmatic function and is a common feature in natural language.[135] Other types of marked iconic language, such as onomatopoeia, are also deliberately introduced as expressive devices in literary language; as a matter of fact, it is possible to interpret many figures of speech as iconic.[136] However, as far as language comprehension is concerned, no specific effect of iconicity has been detected so far. Research aiming at ascertaining whether iconic structures are easier to process has failed to yield cross-linguistically valid results.[137]

Initial-embedded subordinate clauses immediately raise the expectation for a main clause to occur at some point in the sentence and have an anticipating effect analogous to that of arguments preceding a verb within a clause. Final-embedded subordinate clause have no such anticipating effect, and their reading times are similar to those of coordinate clauses. In general, initial-embedded subordinate clauses are read faster than initial matrix clauses, whereas the reading times for the

130 Nir-Berman (2010): 751.
131 E.g. *'The man you saw in the garden was my uncle'.* Syntactically independent clauses can also be centre-embedded, see below.
132 E.g. *'John thought that she would call him'.*
133 De Cuypere (2008): 171–2.
134 Cf. Dik, H. (1995): 8
135 Simone (1995a), Askedal (1995): 19, Haiman (2006). Many studies have found that iconicity is generally assumed by receivers in language comprehension: by default, the events are assumed to be presented in the same order as they occurred, unless other specific information is provided, see Ji (2010).
136 Nänny-Fischer (2006). For the information-structuring function of clause order in Greek see Buijs (2005).
137 Cooper-Klouda (1995). As we mentioned above, this idea is hinted at in the *Rhetorica ad Alexandrum,* 30.6.2–5.

following clause (which would be a superordinate clause in the former case and a subordinate or coordinate clause in the latter) do not differ.[138] Moreover, the same processing advantage can be assumed for subordinate clauses that are anticipated by some elements in the matrix clause or that occur much more frequently in final position. Such is the case with subject infinitive clauses, which are normally anticipated by impersonal verbs, whereas verbs of saying or perception anticipate object and declarative clauses and *verba timendi* complement clauses. Likewise, indirect questions are often anticipated by the superordinate verb.

In short, subordination is not a hindering factor to comprehension *per se*. A subset of subordinate structures to be examined separately is that of non-finite adverbial or complement clauses, which represent one of the most typical features of Classical Greek. At first sight, non-finite verbs can be assumed to be more demanding than finite verbs in language processing, in that they provide less syntactic and semantic information. Namely, non-finite adverbial clauses "do not specify in which way they modify the state of affairs expressed in the main clause",[139] which is a source of difficulty for students translating Greek participles, for example. This is not always the case: participles and infinitives can be substantivized by means of an article or can be introduced by subordinators. This helps clarify their syntax and semantics. In general, the 'incompleteness' and grammatical underspecification of non-finite verbs makes them easier to produce than finite verbs: as a matter of fact, agrammatic and aphasic patients use them much more extensively than individuals with no language deficits. This does not apply to the same degree to patients who speak null-subject languages, that is, languages that allow the omission of a pronominal subject (null-subject languages are a subclass of pro-drop languages). Since such patients do not need to produce an overt subject, they can avail themselves of more cognitive resources, which they employ to conjugate a finite verb.[140] Young children also tend to use non-finite verbs instead of finite forms.[141] In particular, children acquiring

[138] Rummer et al. (2003).
[139] Kortmann (2001): 164.
[140] Bastiaanse (2011).
[141] de Roo (2001), de Roo et al. (2003), Leonard et al. (2002).

French and the Germanic languages tend to use the infinitive (in the so called 'optional infinitive' stage). Greek children use the perfective stem with a third person singular ending (for instance, διαβάσει, from διαβάζω), which normally appears as an invariable form in the periphrastic tenses (for instance, ἐχω διαβάσει *'I have read'*). Italian children use the past participle, although the infinitive is occasionally found. Optional infinitives are also produced by Spanish children, together with bare stems.[142] Children acquiring null-subject languages tend to learn to conjugate finite forms earlier than children acquiring 'optional infinitive' languages. When it comes to comprehension, it seems that overt morphological information does not support understanding in off-line comprehension tasks, where, as we have seen, production is involved. This applies to children acquiring both types of language. An on-line comprehension experiment, however, showed that even children learning an 'optional infinitive' language like German can make use of the information provided by finite verbs, which are hard to produce but not to understand.[143] As a matter of fact, Italian young children can recognize person morphemes in spontaneous conversation with their parents.[144] Both Spanish and Italian children are able to use non-finite verbs appropriately and to distinguish between finite and non-finite forms. To sum up, non-finite verbs are cognitively simpler to produce than finite verbs. In turn, finite verbs are not harder to understand than non-finite verbs, but nothing seems to indicate that they are easier. As a consequence, we can consider the distinction between finite and non-finite verbs as ultimately irrelevant for the purposes of this study.

Centre-embedded clauses, which, from a syntactic point of view, can be either subordinate or independent (parentheses, or 'appositional' clauses), raise specific problems and shall be discussed separately in the next section.

4.2.6 Centre-embedding and parentheses

In *Rh.* 1407a 19–30, Aristotle discusses the correct use of 'connectives' (σύνδεσμοι).

[142] Hyams (2005), Guasti (1993), Grinstead et al. (2009).
[143] Brandt-Kobele-Höhle (2010).
[144] Guasti (1993): 29 n. 17.

He finds fault with a sentence like ἐγὼ μέν, ἐπεί μοι εἶπεν (ἦλθε γὰρ Κλέων δεόμενός τε καὶ ἀξιῶν), ἐπορευόμην παραλαβὼν αὐτούς. Too many unexpected connectives (ἐπεί, γάρ, τε, καί) occur before the main verb (ἐπορευόμην), and the long distance between initial ἐγώ and the ἐπορευόμην makes the sentence unclear (ἐὰν δὲ πολὺ τὸ μεταξὺ γένηται τοῦ ἐπορευόμην, ἀσαφές). As we have seen (4.2.2), distance is perceived as adding up to difficulty especially in off-line evaluations, which correspond exactly to what we find in the ancient rhetorical literature. The structure of this sentence can be analysed as shown in the diagram below. The figures between brackets correspond to the depth of each clause. This is defined as the hierarchical level of a clause relative to the main clause, which is always at depth zero.[145]

ἐγὼ μέν	Main clause, beginning (0)
ἐπεί μοι εἶπεν	Centre-embedded clause (1)
ἦλθε γὰρ Κλέων δεόμενός τε καὶ ἀξιῶν	Final-embedded appositional[146] clause (1)
ἐπορευόμην παραλαβὼν αὐτούς.	Main clause, end (0)

Right after the initial pronoun, which marks the beginning of the main clause, a centre-embedded subordinate clause starts. Centre-embedding has been an important field of investigation for research on language comprehension, and in general, as a potential source of difficulty.[147] Difficulties related to centre-embedding are mainly due to interference effects (the embedded clause can contain constituents that may compete with constituents of the matrix clause in the assignment of thematic roles).[148] On-line comprehension difficulties have been explained as the result of increases in *storage cost*[149] instead. According to the storage cost hypothesis, as each word is encountered, it may raise the expectation for a syntactic head: an

[145] Karlsson (2007): 367–8.

[146] Appositional clauses are independent clauses in an asymmetric parataxis relationship with the clause they follow. Since they are not integrated in the syntactic representation of such clauses, they cannot be regarded as subordinate clauses. However, they can only be understood in relation with another clause, see Nir-Berman (2010): 750.

[147] Cf. Gibson (2000): 96, Warren-Gibson (2002): 79–80, Chen et al. (2005): 144, Nakatani-Gibson (2010): 94.

[148] Van Dyke (2007).

[149] Gibson (2000): 114–15, Chen et al. (2005).

adjective would predict a noun, a noun would predict a verb, a subordinator would predict a verb, and so on. The more expectations are left pending at a given point, the longer the predicted reading time at that point should be. As a consequence, words appearing at the beginning of a sentence should be more likely to be harder to process than words occurring at the end, where most expectations should be satisfied already. This theory is somewhat complementary to the surprisal hypothesis,[150] which predicts that it is more likely that words appearing late in the sentence are processed faster, provided that they are predictable enough.

The following table shows the word-by-word storage cost for the sentence presented by Aristotle:

	ἐγὼ	μὲν	ἐπεὶ	μοι	εἶπεν	ἦλθε	γὰρ	Κλέων	δεόμενός	τε	καὶ
Pr. head type	V	V	V, V	V, V	V, N	V, N, N	V, N, N	V, N	V, N	V, N	V, N
Predicted heads	1	1	2	2	2	3	3	2	2	2	2

	ἀξιῶν	ἐπορευόμην	παραλαβὼν	αὐτούς
Pr. head type	V, N	–	N	–
Predicted heads	2	0	1	0

When the initial personal pronoun is encountered, a verb is anticipated. The expectation for another verb arises when the first subordinator (ἐπεί) is encountered. At this point, since a reader/hearer would not know whether the subject of the subordinate clause is the same as that of the main clause, and Greek is a null-subject language, the expectation for a subject noun phrase only arises as the third person verb is encountered (εἶπεν). On the other hand, this verb satisfies the expectation set up by ἐπεί. The third person verb that follows immediately (ἦλθε) shows that an asyndetic appositional clause (a parenthesis) begins. The subject of εἶπεν has not shown up, but nothing suggests that that of ἦλθε should be the same, and expectation may arise for another subject. This expectation is fulfilled by Κλέων. However, only as ἐπορευόμην occurs can we infer that Κλέων must be the subject of εἶπεν, too. Storage cost peaks around the centre-embedded clause and its loosely

[150] Nakatani-Gibson (2010): 107.

coordinated appositional clause. If we were able to test this reconstruction experimentally, this analysis would predict that the hardest word to process should be ἦλθε. This would also be plausible from the point of view of the surprisal theory,[151] since we can expect that the probability of two non-coordinated finite verbs in the same tense and person occurring immediately after one other should be quite low in Attic. Of course, the theoretical premisses of the surprisal and the storage cost hypotheses are substantially different, since one is centred around the incremental probability of structures, the other focuses on memory loads.

This analysis (as well as Aristotle's remark) is not too instructive, mainly due to two reasons. First, the sentence is taken in isolation. Discourse context would have made it much more straightforward to infer what the subjects of εἶπεν and Κλέων would be, and that they coincide. Secondly, one must remember that difficulties detected in *visual* on-line comprehension tasks might well not match the situation with *auditory* presentation. The results predicted by this type of analysis would only apply to visual comprehension. It is a cross-linguistic fact that parentheticals are marked off by prosody in a pretty regular way, and more importantly, such prosodic marking is an effective disambiguator for the hearers (cf. 4.2.7).[152] It is true that long parentheses can induce locality effects even in on-line processing,[153] but it is hard to see how the long distance separating ἐγώ from ἐπορευόμην could have been problematic: as I mentioned, Greek is a null-subject language, and the morphosyntactic information conveyed by the personal pronoun is already encoded in the morphology of ἐπορευόμην.

Centre-embedding can also increase the likelihood that referents may become less easily accessible, or that referential ambiguities may arise.[154] Let us consider a sentence from Plato (*Ap.* 19e 4–20a 2):

> τούτων γὰρ ἕκαστος, ὦ ἄνδρες, οἷός τ' ἐστὶν ἰὼν εἰς ἑκάστην τῶν πόλεων τοὺς νέους—οἷς ἔξεστι τῶν ἑαυτῶν πολιτῶν προῖκα συνεῖναι ᾧ ἂν

[151] Levy (2008): 1151.
[152] Shattuck-Hufnagel-Turk (1996): 198–9, Dik, S. C. (1989): 380.
[153] Cf. Dehé-Kavalova (2007a): 8.
[154] Warren-Gibson (2002), cf. Karlsson (2007): 382–3.

> βούλωνται—τούτους πείθουσι τὰς ἐκείνων συνουσίας ἀπολιπόντας σφίσιν συνεῖναι χρήματα διδόντας καὶ χάριν προσειδέναι.
>
> 'Each of these men [*sc.* the sophists], gentlemen, travelling to each city as much as he can, convinces the young—to whom it is possible to associate for free with whoever they may wish among their fellow citizens—they convince these to associate with them, having given up the association with those men, for money, and to be grateful besides'

Here, the first occurrence of οὗτοι refers first to 'the sophists' (τούτων), but the second one refers to 'the young' (τούτους). In between, a centre-embedded relative clause appears. In that clause, both οἷς and ἑαυτῶν refer to 'the young'. More importantly, 'the young' becomes the subject of another relative clause, which is final-embedded into the centre-embedded one. Now, 'the young' is the subject of a third person plural verb (βούλωνται). Πείθουσι is also in the third person plural, which means that this is a case of notional agreement (*ad sensum*), since ἕκαστος is in the singular. Given this picture, I suspect that some confusion would arise as to the referent which τούτους points to, and that to some hearers it might have ended up denoting 'the sophists' rather than 'the young'.[155] If this were the case, the latter referent might have been interpreted erroneously as the subject of πείθουσι.

In conclusion, there is no reason to regard centre-embedded structures as hard to understand *per se*.[156] On the other hand, they can be regarded as 'hotspots' or as a 'risk factor' for potential hindrances to language processing which are to be explained otherwise. Ambiguities are likely to arise when centre-embedding results in some 'vulnerable' word order patterns, especially if the verbs of the matrix and the embedded clause have some morphological and semantic features in common. In particular, if the verb of the centre-embedded clause precedes its subject (if overt) and is in the same person and number as that of the matrix clause, then the centre-

[155] There are instances of multiple οὗτος pointing to different referents in the same sentence (e.g. Hdt. 7.206), but it is often the case that this demonstrative pronoun points to the same referent (e.g. Th. 2.13.9, Semon. fr. 7 West 80–2, X. *Mem.* 4.2.28).

[156] In some cases parentheses seem to assist on-line processing, due to their disambiguating function and their prosodic and pragmatic properties, see Kavalova (2007): 167–71, cf. Dehé (2007): 267.

embedded verb can disrupt the integration of the matrix verb, since it would satisfy at least some of the morphosyntactic expectations raised by the subject of the matrix clause. However, prosody would most often mitigate these effects.

4.2.7 Prosody

Demetrius (*Eloc.* 192–3) maintains that asyndeton is a source of obscurity: the 'disconnected' style conceals the beginning of *cola* and calls for recitation (κινεῖ γὰρ ὑπόκρισιν ἡ λύσις). Conversely, a 'well connected' style is more appropriate to be read out of a written text. The same had been argued by Aristotle (*Rh.* 1413b 17–34): one *cannot help reciting* asyndeta (τὰ ἀσύνδετα […] ἀνάγκη γὰρ ὑποκρίνεσθαι). What feels inappropriate, if not difficult, on a page—especially in the absence of punctuation marks—becomes clear and effective when performed or read aloud.

This makes perfect sense: as I often remarked in the previous sections, hearing has a remarkable advantage over reading in that overt prosodic information can effectively guide the hearer in deciphering syntactic difficulties and ambiguities.[157]

Across languages, prosody is a powerful disambiguator. Prosodic boundaries and intonation have a direct effect on how linguistic material is stored in working memory. This influences how words are grouped together and ultimately guides syntactic parsing.[158]

Attempts have been made to devise criteria to reconstruct the prosody of Classical Greek.[159] In this respect, metrical texts are advantageous, at least when it comes to the detection of prosodic boundaries. A well-known criterion is the so-called 'Wackernagel's Law', as applied by Fraenkel: clitics occupy the second place in the *colon* they belong to, and as a corollary, a *colon* begins before the element preceding a clitic. How such *colon*-initial elements are to be defined is debated—certainly not as syntactic elements, probably as 'prosodic peaks'.[160] As Helma Dik remarks,

[157] Kraljic-Brennan (2005).

[158] The literature is very rich. See, for instance, Carlson et al. (2009), Langus et al. (2012), Fougeron (2006), cf. Weber et al. (2006), Snedeker-Trueswell (2003).

[159] Most notably Devine-Stephens (1994), and recently, Scheppers (2011) (*non vidi*).

[160] Wackernagel (1892), Fraenkel (1933), Fraenkel (1964b), Devine-Stephens (1994): 42–30, Dik, H. (1995): 36–7, Dik, H. (2007): 17–22, Marshall (1987).

syntactic analysis helps discern clauses, which she calls "the closest textual equivalent to intonation units".[161] When it comes to lower-level units, syntactic analysis must be applied with some limitations. The prosodic hierarchy of a sentence does not correspond in a one-to-one fashion to the syntactic hierarchy: prosody and syntax are not *isomorphic*. Syntax certainly constrains the choices that a speaker can make but does not predict all the prosodic features of the utterance. These are also influenced by discourse and pragmatic structure, as well as constraints specific to prosody itself.[162] Not all syntactic elements correspond to prosodic elements, and different prosodic realizations can correspond to one and the same syntactic structure. On the other hand, certain types of syntactic difficulties are systematically disambiguated by prosody, which means that in those cases the syntactic structures are regularly reflected in the prosody. Crucially for the purpose of this study (as we shall see in Chapter 5), one of these types is sequences where some syntactic element could plausibly be attached either to the element which precedes it or to that which follows it (ambiguous left vs. right attachment): in English, a sentence like *'when I eat slowly I get sleepy'* will be interpreted as *'when I eat slowly, I get sleepy'* if a prosodic boundary is placed after *'slowly'*, and as *'when I eat, slowly I get sleepy'* if the boundary is placed before *'slowly'*.[163] Prosodic boundaries may consist of pauses accompanied by a boundary tone, abrupt changes in pitch, or transitions from a pitch contour to another. The phonetic reality of high-level prosodic boundaries is universal: the beginning and the end of utterances are marked by silence in every language. Lower-level prosodic boundaries, such as those between words, are realized in ways specific to individual languages. The prosodic system of a language, however, can be acquired independently from the language itself: it is possible to learn to recognize

[161] Dik, H. (2007): 17.

[162] Bocci (2008), Büring (2013), Samek-Lodovici (2005). See Dik, S. C. (1989): 379–99 on the relationship between pragmatic functions and prosodic contours. Prosodic highlighting for focus elements is not crosslinguistically consistent. In some languages, it is particularly weak and is supported by the addition of specific morphological markers. Prosodic prominence involves different phonetic devices (stress, pitch, lengthening, etc.) in a way specific to each language, cf. Downing (2006).

[163] Shattuck-Hufnagel-Turk (1996).

the prosodic units of any language without knowing that language at all and regardless of how different it is from one's own language.[164] What matters here is that the *function and effect* of prosodic boundaries are universal,[165] regardless of their phonetic appearance, which is hazardous, and not necessary, to reconstruct.[166] As we have seen, clarity was a *desideratum* for ancient Greek verbal communication and a necessary feature for public communication. In order to be clear, one obviously needed to avoid ambiguity (cf. Demetr. *Eloc.* 196). It is true that 'meaningful' ambiguities might still be deliberately sought for, but those which could lead to ungrammatical (partial) interpretations altogether would most likely be avoided. On these grounds, we can assume that whenever an oral reader or a speaker encountered or produced an ambiguous structure of a kind which could be disambiguated by means of a prosodic boundary, he would insert one.[167]

However, prosody is no *deus ex machina* capable of resolving all ambiguities. In particular, it does not seem to help in resolving those which involve the choice between near and far attachment, as in *'touch the branch with a flower'*, where *'with a flower'* can be interpreted either as an instrument (far attachment) or as a feature of the branch (near attachment).[168]

As I mentioned in Chapter 2, prosody is also involved in reading comprehension and

[164] Endress-Hauser (2010). An experiment by Langus et al. (2012) showed that participants could reconstruct the syntactic structure of utterances *even* in a non-existing language *even* when the prosodic system was not consistent that of their native language.

[165] Cf. Li et al. (2011) on the effects of clause-internal prosodic boundaries in Chinese, for instance.

[166] As Ronnet (1971): 43–9 tried to do as he talked about 'rising' and 'falling' accentuation for hyperbata in Demosthenes.

[167] Cf. Frazier et al. (2006), on the 'rational speaker' hypothesis: "the speaker is using prosody in an internally consistent, rational, fashion, and that the listener assumes such rationality in interpretation".

[168] See Shattuck-Hufnagel-Turk (1996): 199. In Exp. 1 from Snedeker-Trueswell (2003) listeners parsed correctly ambiguous sentences uttered with appropriate prosodic phrasing 70% of the time, as opposed to about 95% with unambiguous sentences. The participants of Exp. 3 from Kraljic-Brennan (2005) did better in a similar task (83% correctness as opposed to near perfection with unambiguous sentences). In Exp. 3 from Carlson et al. (2009), correct prosodic rendering raised the percentage of correct parsings from about 10% of the time (wrong phrasings) to about 30% of the time.

induces 'inner speech' and subvocalization. The reconstruction of prosody interacts with the analysis of syntax. Readers tend to recreate the more natural prosody as they proceed, but as it builds up, prosodic information biases subsequent syntactic decisions.[169] Unexpected syntactic structures can induce wrong prosodic representations, which clash with the expected natural prosody and result in wrong parsings. Reexamination of such structures requires a change in their prosodic representation, which is assumed to be cognitively demanding.[170] Of course, punctuation can help this process and function as an orthographic equivalent of intonation boundaries.[171] Readers in classical Athens could not really avail themselves of a fully developed punctuation system. Accurate oral rendering of difficult structures is not easily achieved at first sight. Public speakers would have rehearsed their text anyway, but private readers would probably have some problems. A silent reader would need a second reading in order to overcome a syntactic difficulty. The position of a 'collective' reader addressing a small audience would be similar to that of a public speaker: he would either have to rehearse the text in advance,[172] possibly annotating it, or he would be forced to correct himself. Syntactic difficulties would be hard to read, but a good number of them would be much less hard to understand in listening.

4.2.8 Vocabulary

Ancient Greek rhetoricians constantly recommend using common words in their proper meaning. Aristotle maintains that τὰ κύρια ὀνόματα make speech clear and persuasive. Metaphors can be employed—everybody does. If used skilfully, they will give an exotic twist without jeopardizing clarity (*Rh.* 1404b 5–19, 33–7). Similar ideas are found in the *Rhetorica ad Alexandrum* (30.7): clarity is a consequence of

169 Kentner (2012).

170 Bader (1998), Frazier et al. (2006): 247.

171 Steinhauer (2003), Hirotani et al. (2006). The first sentence of the abstract of Steinhauer-Friederici (2001) is a brilliant demonstration of these effects: "Just as the false comma in this sentence, shows punctuation can influence sentence processing considerably".

172 Cf. Allan, D. J. (1980): 248 ("the preparation of lectures is a form of πόνος").

using appropriate and common words. Demetrius (*Eloc.* 191–2) follows the same line. Compound words do not belong in the plain style: they sound magnificent, but clarity matters more and consists first of all of employing τὰ κύρια.

It is well established in experimental psycholinguistics that high frequency words are recognized faster than low frequency words. However, this process is influenced by the context a word belongs to, especially in auditory word recognition. As we have seen, in on-line comprehension, words set up expectations for others to follow: as it were, they generate sets of 'lexical candidates'. As a consequence, rare words that are plausible in a context are easier to process than frequent words that do not belong there.[173] Implausible frequent words are easier to process than implausible rare words, but there is no difference between rare and frequent word as long as they are equally predictable.[174] Both the frequency of words and their predictability should be assessed on a corpus of natural language, something which we hopelessly lack for Attic. We have a few lists of unusual words, but only a small number of them are contemporary to the period this study is about (for instance, Arist. *Rh.* 1406a 5–9). Later lists are unreliable for our purposes: Dionysius of Halicarnassus, for instance, calls some unusual words 'antiquated' (ἀπηρχαιωμένα, *Amm.* 2, 3), but would a fourth-century Athenian have? As Shipp remarks, "words have been misnamed 'poetic' merely because of their rarity in Attic prose or absence from it", but the Attic literary texts cannot be taken as a representative and balanced corpus of natural Attic.[175] Technical terms were not probably used by non-specialist native speakers, but they were probably commonly comprehensible, as Willi points out: "because Greek, unlike most modern languages, did not develop its technical vocabulary with the help of foreign morphological and lexical material, almost all technical terms must have been analysable by native speakers".[176] Even though we are able to identify various technical vocabularies in Attic, it would be very hard to guess to what extent the average Athenian was exposed to each of them and, at the bottom line, to define

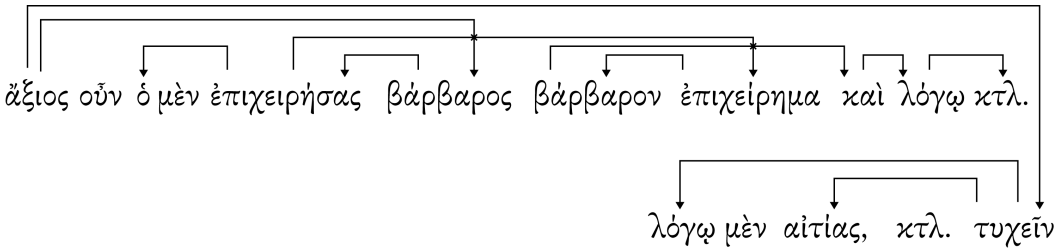
[173] Staub (2011): 428.
[174] Roland et al. (2012): 275.
[175] Shipp (1979): 1.
[176] Willi (2003): 60.

a sociolinguistically average Athenian. As a consequence, I am quite pessimistic about the possibility of evaluating word frequency and predictability in Attic in any thorough and meaningful way.

4.3 Modern interpretations and ancient clarifications

It is not an unknown practice for modern critics[177] to make claims about the difficulty of a passage. In this section, I will briefly analyse a sample of three passages in order to test whether such claims can be supported by an explanation which takes into account the psycholinguistic factors described in the rest of this chapter. Let us start with sentence from Gorgias' *Helen* (DK 82 B 11.7), which Gagarin calls an 'extreme example' of verb postposition:[178]

> ἄξιος οὖν ὁ μὲν ἐπιχειρήσας βάρβαρος βάρβαρον ἐπιχείρημα καὶ λόγῳ καὶ νόμῳ καὶ ἔργῳ λόγῳ μὲν αἰτίας, νόμῳ δὲ ἀτιμίας, ἔργῳ δὲ ζημίας τυχεῖν
> 'Thus, the barbarian who undertook a deed barbarous in word and law and fact deserves to meet with blame in word, loss of rights in law, and punishment in fact' (transl. M. Gagarin)



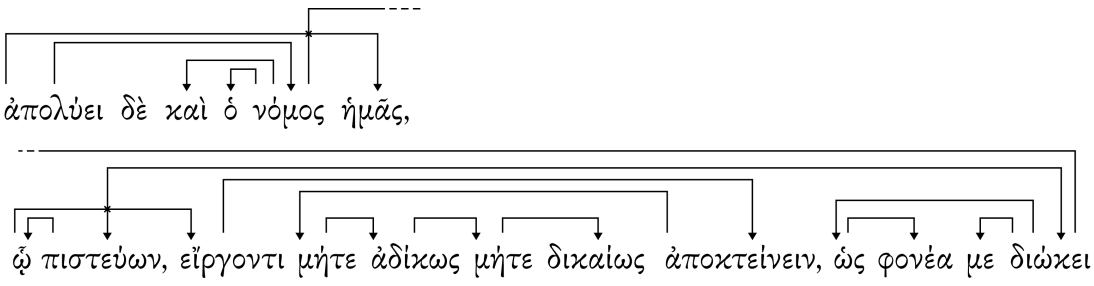
Even though the dependency between the initial ἄξιος and the final τυχεῖν is extremely long, the abundance of intervening arguments makes the verb highly predictable, as Gagarin correctly remarks. He is also right when he points out that "the three genitives dependent on *tychein* have already been understood because they could be construed with the initial *axios* with little difference in meaning". This, however, would lower the expectation for the final infinitive. On the other hand,

[177] E.g. Flashar (1969): 29, who describes the 'monster' sentence at Th. 2.42.4 as the "schwierigsten Satz des thukydideischen Geschichtswerkes", cf. section 5.4.12 below.
[178] Gagarin (1999): 170.

intonation would mark that the sentence does not finish at ζημίας, and that at least this genitive depends on τυχεῖν, which would end up being interpreted as an argument of ἄξιος coordinate to the previous genitives. This is not the only example of ἄξιος and τυχεῖν 'fighting' for intervening genitives: compare, for instance, ἄξιος καὶ ἐλέου καὶ βοηθείας καὶ τιμωρίας παρ' ὑμῶν τυχεῖν (Antipho 1.21) and ἄξιος ἂν ἦν συγγνώμης τυχεῖν τινός (Antipho 4.1.5). These two cases could be more easily disambiguated by a prosodic boundary preceding the genitives. As to the rest of the sentence, the chiastic arrangement of ὁ μὲν ἐπιχειρήσας βάρβαρος βάρβαρον ἐπιχείρημα should make ἐπιχείρημα predictable. The hyperbaton involving ἐπιχειρήσας and ἐπιχείρημα does not entail structural problems. Just as *'bites'* in the English example at 4.2.2, ἐπιχειρήσας is a transitive verb which can be used without a direct object, the expectation for which would be determined by intonation. On the other hand, the attachment of the datives following ἐπιχείρημα might be uncertain, either low (that is, to βάρβαρον) or high (to ἐπιχειρήσας). The possibility that a hearer might opt for attachment to a distant element, rather than that to a close one, is determined by the plausibility of the datives modifying an adjective by which they are separated by the noun which the adjective modifies. Ideally, this should be tested against a corpus of natural Attic.

In the same paragraph, Gagarin quotes a sentence from Antiphon's *Second Tetralogy* (2.9), which he deems "nearly incomprehensible":

> ἀπολύει δὲ καὶ ὁ νόμος ἡμᾶς, ᾧ πιστεύων, εἴργοντι μήτε ἀδίκως μήτε δικαίως ἀποκτείνειν, ὡς φονέα με διώκει
>
> 'The law acquits us, trusting in which, which[179] prevents to murder both unjustly and rightly, he prosecutes me as a murderer'

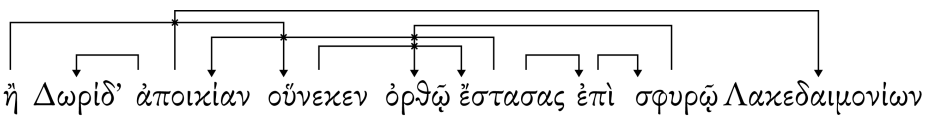


[179] See Chapter 7.

To start with, a non-projective dependency connects νόμος, which is the antecedent of the relative pronoun ᾧ, to the top node of the relative clause (that is, its verb διώκει).[180] Between the antecedent and the beginning of the relative clause only ἡμᾶς occurs, which cannot possibly be mistaken for the antecedent of ᾧ. The relative pronoun is assigned the same referent as νόμος, which rules out the possibility that this is also interpreted as the agent of πιστεύων. In other words, the subject of the relative clause is not expected to be anaphoric to νόμος. Another non-projective dependency is that connecting ᾧ to εἴργοντι, an appositive conjunct participle.[181] There are no reasons to infer that the integration of εἴργοντι would have been difficult. Agreement shows clearly that it is to be constructed with ᾧ, and the entire phrase it governs would probably be uttered with a parenthetical intonation (see 4.2.6). Some other prosodic boundary would guarantee that hearers construct the subsequent adverbs with the infinitive (right attachment). The rest of the relative clause is arranged linearly, and the final verb is highly expected. To sum up, I doubt that a native speaker would have found this sentence nearly incomprehensible upon hearing. It is us who might have trouble translating this sentence literally (if only in our heads, as we read), as my very uncomely attempt shows.[182]

Let us now turn to another example and analyse verses 12–14 of Pindar's seventh *Isthmian* Ode:

> ἢ Δωρίδ' ἀποικίαν οὔνεκεν ὀρθῷ ἔστασας ἐπὶ σφυρῷ Λακεδαιμονίων
>
> 'Or because you set the Doric colony of the Lacedaemonians up on a straight ankle'



[180] See n. 122. This pattern matches the definition of a 'type *b*' hyperbaton as shown in the graph above.

[181] That is, a participle which encodes a property and refers it to a noun. The semantic subject of such participles is often different from the subject of the clause they belong to. See Pompei (2006): 381.

[182] *Pace* Gagarin (1997): 34.

This sentence is highly non-projective:[183] according to Rossi (1978), the distance between οὕνεκεν and ἔστασας, determined by the position of ὀρθῷ, and that between ἀποικίαν and Λακεδαιμονίων are cases of 'abnormal' hyperbaton, and therefore sources of difficulty. Now, a verb in the indicative like ἔστασας is anticipated by the conjunction οὕνεκεν. There is no risk that ὀρθῷ should be considered an argument of ἔστασας: ὀρθός is never used as a noun in the masculine, let alone if it is not preceded by an article, and ἵστημι does not govern the dative. Conversely, it sets up an expectation for a noun which is satisfied by σφυρῷ. The subordinating conjunction οὕνεκεν might itself be unexpected, given the presence of another conjunction (ἤ) at the very beginning of the sentence. However, this concern disappears if some context is taken into account: the sentence starting at line 9 and immediately preceding this one reads:

> […] ἢ ὅτε καρτερᾶς
> Ἄδραστον ἐξ ἀλαλᾶς ἄμπεμψας ὀρφανόν
> μυρίων ἑτάρων ἐς Ἄργος ἵππιον;

Here, initial ἤ is followed by another subordinating conjunction (ὅτε), and this structure is likely to prime that of the following sentence. As to Δωρίδ' ἀποικίαν, which appears before the subordinator οὕνεκεν, this is a case of displacement of a constituent from the subordinate clause it belongs to. This construction is anything but rare in Greek, especially in 'quasi-spoken' Greek, and it is particularly common when the superordinate verb governs an object substantive clause; in this case, however, the implied main verb is εὔφρανας ('you delighted', l. 3), and the subordinate clause is adverbial.[184] In the ode, εὔφρανας has θυμὸν τεόν (l. 2) as a direct object. The source of delight is expressed by a variety of parallel but different constructions: adverbial clauses, prepositional phrases introduced by ἀμφί, or the genitive. This rules out the possibility that Δωρίδ' ἀποικίαν might be mistaken as the direct object of the implied verb. The only word which seems to have been difficult to integrate in the structure of the sentence is the final genitive Λακεδαιμονίων. It

[183] Sulzer (1961): 48 classifies it as an instance of "zerdehnt" (overstretched) word order.
[184] Chanet (1988), Slings (1992): 105–8.

immediately follows a different noun from the one it truly modifies, and chances are that it might have been more easily, but erroneously, interpreted as a modifier of σφυρῷ rather than of ἀποικία.

This small sample shows that even though some intuitions are right, it has been hard for scholars to truly enter a native speaker's mind, so to speak: we cannot help reading Classical Greek through the lens of our partial and acquired linguistic competence. Moreover, we are limited to the written medium. A psycholinguistic approach helps us, and forces us to, reconstruct the mechanisms which underlay a native speaker's comprehension in the appropriate medium. In the absence of native speakers, we cannot test the assumptions derived from this approach experimentally. However, we possess some precious testimonies of what sounded clear or unclear to native speakers. I am not thinking about ancient theoretical discussions of σαφήνεια, which, as we have seen, are often more ideological than empirical. What can truly be revealing are the examples that the ancient rhetoricians or commentators provide. If we believe that they chose them because they *did* find them *empirically* difficult (sentence *x* is difficult and, theoretically, construction *y* is difficult → sentence *x* has construction *y* → sentence *x* is a good practical example of the difficulty of construction *y*), and not just to prove their point (theoretically, construction *x* is difficult → sentence *y* has construction *x* → sentence *y* must be difficult), they can work for us as a replacement of the experimental results, as I have tried to show throughout this chapter.

In particular, ancient *metatheseis* can be a very pertinent testing ground. As I mentioned, rewriting a sentence or a passage was a way for ancient commentators to either show how bad the style of that passage was (if their *metathesis* was meant to improve the text), or how good it was (if they should not be able to improve it). In some cases, they would just try to provide an alternative without implying that it is better or worse than the original. *Metathesis*, as a method, was supposed to call on the *empirical* judgement of the readers. Dionysius of Halicarnassus, for instance, is very explicit as he invites the reader to *judge for himself* whether his rewriting is

inferior or superior to a passage from Isocrates (*Dem.* 19).[185] Besides, it is hard to imagine a purely 'ideological' selection process for texts to be rewritten (theoretically, features *a, b, … z* are good/bad → text *x* has features *a, b, … z*, therefore it is good/bad → rewrite text *x* altering features *a, b, … z*). An empirical process seems easier to assume: text *x* is good/bad → text *x* happens to have features *a, b, … z*, and as a matter of fact, features *a, b, … z* are supposed to make text good/bad → rewrite text *x* altering features *a, b, … z*. Showing the difference between the original text and a possible *metathesis* is meant to convince the reader that the altered features determine how the text is *perceived* empirically. The original and the rewritten texts must have the intended effect on the reader in the first place, in order for the argument to be persuasive.

In his treatise *On Thucydides* (section 25), Dionysius rewrites a long sentence from chapter 34 of book 4 of the historian, in order to show how Thucydides could have made it 'clearer and more pleasant' (σαφεστέρα δὲ καὶ ἡδίων). As I argue, it is likely that his *metathesis* was indeed clearer than the original to a native speaker. This is confirmed by a comparison based on the reconstruction of the comprehension processes, as I shall briefly show. Below, I print the two versions as parallel texts:

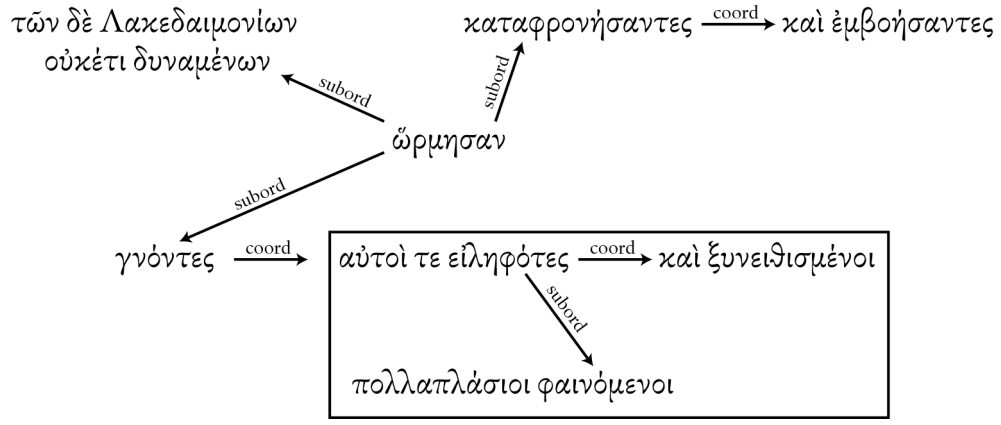
Th. 4.34	D.H. *Th.* 25
τῶν δὲ Λακεδαιμονίων οὐκέτι ὀξέως ἐπεκθεῖν ἢ προσπίπτοιεν δυναμένων, γνόντες αὐτοὺς οἱ ψιλοὶ βραδυτέρους ἤδη ὄντας τῷ ἀμύνασθαι, καὶ αὐτοὶ τῇ τε ὄψει τοῦ θαρσεῖν τὸ πλεῖστον εἰληφότες πολλαπλάσιοι φαινόμενοι καὶ ξυνειθισμένοι μᾶλλον μηκέτι δεινοὺς αὐτοὺς ὁμοίως σφίσι φαίνεσθαι, ὅτι οὐκ εὐθὺς ἄξια τῆς προσδοκίας ἐπεπόνθεσαν, ὥσπερ ὅτε πρῶτον ἀπέβαινον τῇ γνώμῃ δεδουλωμένοι ὡς ἐπὶ Λακεδαιμονίους, καταφρονήσαντες καὶ ἐμβοήσαντες ἅθρόοι ὥρμησαν ἐπ' αὐτοὺς […].	τῶν δὲ Λακεδαιμονίων οὐκέτι ἐπεκθεῖν, ἢ προσπίπτοιεν, δυναμένων, γνόντες αὐτοὺς οἱ ψιλοὶ βραδυτέρους ἤδη, συστραφέντες καὶ ἐμβοήσαντες, ὥρμησαν ἐπ' αὐτοὺς ἁθρόοι· ἔκ τε τῆς ὄψεως τὸ θαρρεῖν προσειληφότες, ὅτι πολλαπλάσιοι ἦσαν, καὶ ἐκ τοῦ μηκέτι δεινοὺς αὐτοὺς ὁμοίως σφίσι φαίνεσθαι καταφρονήσαντες, ἐπειδὴ οὐκ εὐθὺς ἄξια τῆς προσδοκίας ἐπεπόνθεσαν, ἣν ἔσχον ὑπόληψιν, ὅτε πρῶτον ἀπέβαινον τῇ γνώμῃ δεδουλωμένοι ὡς ἐπὶ Λακεδαιμονίους.

[185] De Jonge (2008): 382–3.

‘Since the Lacedaemonians were no longer able to dash out rapidly where they attacked before, the light troops, finding that they were by then slower as they were defending themselves, and having themselves gained most of their courage for the sight, since they seemed many more themselves, and having become more familiar with the fact that they no longer seemed to them as terrible, since they had not suffered things worth what they feared, as when they first disembarked subjugated by the idea that they were to fight the Lacedaemonians, with disdain and shouting they rushed in crowds against them.’

‘Since the Lacedaemonians were no longer able to dash out rapidly where they attacked before, the light troops, finding that they were by then slower, formed in a mass and shouting, rushed in crowds against them: having gained their courage from the sight, since they were many more, being disdainful since they no longer seemed to them as terrible, because they had not suffered things worth what they feared, which prejudice they had, when they first disembarked subjugated by the idea that they were to fight the Lacedaemonians’

Let us start from the original text of Thucydides. After the initial genitive absolute, a long series of participles in the nominative precedes the main verb (γνόντες, εἰληφότες, φαινόμενοι, ξυνειθισμένοι, καταφρονήσαντες, ἐμβοήσαντες). Εἰληφότες and ξυνειθισμένοι are coordinate to one another by means of τε and καί, and the entire pair is coordinate to γνόντες by means of the previous καί. Φαινόμενοι, instead, is subordinate to εἰληφότες. This complex hierarchical structure is visualized in the diagram below:



It would not be easy to reconstruct this hierarchy if we parsed the sentence incrementally. The first καί raises the expectation for a participle to be coordinate to

γνόντες. Τε is in a Wackernagel position and does not show in an obvious way that it will eventually coordinate the expected participle, more than any other element of the participial clause, to some other element which will follow; in other words, it is not obvious that its *scope* is the participle. Since καὶ ξυνειθισμένοι immediately follows φαινόμενοι, chances are that in the first place it can be interpreted as coordinate to φαινόμενοι itself, which is unequivocally subordinate to εἰληφότες. Dionysius' metathesis makes all such relations explicit, as he replaces φαινόμενοι with a finite verb causal clause (ὅτι πολλαπλάσιοι ἦσαν). We might suspect that a speaker would place some prosodic boundary between φαινόμενοι and καὶ ξυνειθισμένοι, making it clear that the latter participle belongs to the same hierarchical level as γνόντες. The correct phrasing, however, might not have been obvious at first sight upon unrehearsed reading. Moving on, Thucydides uses αὐτοί both as an anaphoric pronoun referring to the Lacedaemonians (αὐτοὺς … βραδυτέρους ἤδη ὄντας, αὐτοὺς ὁμοίως σφίσι φαίνεσθαι, ἐπ' αὐτούς) and as a demonstrative pronoun referring to the skirmishers (οἱ ψιλοί … αὐτοὶ … φαινόμενοι). Dionysius instead only uses αὐτοί to refer to the Lacedaemonians, removing all potential ambiguities in reference assignment. Thucydides also inserts centre-embedded clauses with a finite verb in the third person plural (ὅτι … ἐπεπόνθεσαν, ὥσπερ ὅτε … ἀπέβαινον) between the subject of the main verb (οἱ ψιλοί) and the main verb itself (ὥρμησαν). The subject of these centre-embedded verbs is the same as that of the matrix verb, and as we have seen, it is likely that the centre-embedded verb might have interfered with the integration of the matrix verb, especially in the absence of overt prosodic information. Dionysius turns this nested structure into a linear one, with centre-embedded clauses becoming final-embedded (καταφρονήσαντες, ἐπειδὴ … ἐπεπόνθεσαν, and ἔσχον ὑπόληψιν, ὅτε πρῶτον ἀπέβαινον). Of course, Dionysius need not have been aware of *this type* of changes, which makes them all the more significant, in that they are even more likely to reflect what he empirically considered clearer than what he theorized to be clearer. In the end, we might be able to somehow read an ancient writer's mind.

5. Case study: Attic speeches

5.1 Design

In the previous chapter we established that clarity can be a distinguishing factor between texts meant for public delivery and texts meant for private circulation. The latter could afford to be somehow 'difficult', whereas the former should, at least from a linguistic point of view, aim at being easily understood if we accept that this was the intention of authors who wrote for public speech situations. In order to explore this possibility, we need to compare two corpora of texts which represent each mode of performance. For this purpose, I have applied the following criteria:

a. since the analytical methodology described in Chapter 4 is concerned with the linear order of the sentence, word order in the texts should obey uniform constraints (that is, prose texts cannot be compared with metrical texts, and texts in different metres cannot be compared with one another);
b. the texts should be chronologically compact, with the most recent preferably composed within a century after the oldest;
c. the texts should belong to the same literary genre, so that linguistic variation ascribable to literary and rhetorical conventions can be minimized.

Among the genres cultivated in classical Athens, oratory seems to match all of these criteria the best.[1] Quite importantly, preserved speeches are either entirely fictional or are written versions of speeches that were delivered in public at some point. The former category includes model speeches for rhetorical teaching, speeches reported within historical narrative, speeches only meant for private circulation and recitation, and the speeches embedded in Platonic dialogues. The latter category includes actual assembly speeches, which, if Trevett is right,[2] might not even have been (intentionally) published by their authors, as well as forensic speeches delivered

1 On the downside, only a limited amount of prosodic information can be drawn from prose texts compared to verse.

2 Trevett (1996a), cf. 3.3.8.

at real trials. Very few surviving epideictic speeches, if any at all, can be identified with those that were actually delivered on the occasion for which they were composed.

Ideally, we should be able to build a corpus of texts that only differ with respect to their intended mode of performance. In practice, this would yield a very limited selection of speeches and would ultimately be an abstraction; we would need two different versions of the very same speech, each of which ought to be composed independent of the other. On the other hand, other categories could be responsible for variation within Attic oratory as a genre, namely authorship and rhetorical sub-genres. Minimal pairs of speeches composed by the same author in the same sub-genre but for different modes of performance are very few. One such case is that of Antiphon's *Tetralogies* and his 'real' court speeches.[3] Other possible pairs perhaps are those consisting of Isocrates' *Antidosis*—a forensic speech *sui generis*—and his early logographic speeches, if one believes that they were composed for real lawsuits. With other authors, like Lysias, problems of attribution arise[4] which make it difficult, if not completely pointless, to try to establish minimal pairs of this kind.

For the purpose of this research, I will also not try to distinguish between the sub-genres of oratory. It is true that forensic, assembly, and epideictic speeches belong to somewhat different communicative situations, but I assume that the differences would very be slight, particularly in the attitude of the audience in my view, with all other components being arguably the same. I assume that epideictic, forensic, and political public speeches were not significantly easier or more difficult to understand with respect to one another (at least as far as the linguistic structures are concerned), and I will test the hypothesis that, *as a whole*, they were easier than private speeches of all sub-genres *as a whole*.[5] Since it is impossible to know what proportion of all Attic speeches was represented by each sub-genre, I have tried to design the most

3 On which see Gagarin (2002): 135–69.

4 Todd (2007): 26–32.

5 Issues of this kind are not at all uncommon in corpus studies: one can build a corpus to represent the categories one wishes to study (private and public speeches, in our case), but other categories may be less well represented and observable. On this and other issues of corpus design discussed here, see Hunston (2008).

balanced corpus possible only taking into account speeches whose attribution and as a consequence, original mode of delivery have been reconstructed persuasively. The categories represented in the corpus are shown in the following grid, together with the texts that I have chosen:

	Public	*Private*
Forensic	Lys. 1 (*De Caede Eratosthenis*) Lys. 12 (*In Eratosthenem*) D. 22 (*Adversus Androtionem*) Antipho 1 (*In Novercam*)	Pl. *Ap.* Antipho 4 (*Tetralogia 3*)
Political	D. 9 (*Philippica III*) D. 15 *(De Rhodiorum Libertate)*	Isoc. 6 (*Archidamus*) Isoc. 7 (*Areopagiticus*)
Epideictic	Hyp. 6 *(Epitaphius)*	Th. 2.35–46 Pl. *Mnx.* Isoc. 9 (*Evagoras*)

Public, Forensic

To represent this category, I have chosen two speeches of Lysias, one of Demosthenes and one of Antiphon. Lysias 12 (*In Eratosthenem*) is the only speech that Lysias delivered personally and one of the few in the *Corpus Lysiacum* whose authorship was never put into question. The same applies to Lysias 1 (*De Caede Eratosthenis*).[6] As I briefly mentioned in Chapter 3 (notes 229 and 231), it has been quite controversial as to whether this speech was composed for an actual trial. A large part of the debate is based on evaluations of the strategy and the effectiveness of the argumentation, which different scholars find more or less complete, adequate, and convincing. I shall limit the discussion to the more objective points. Dover, to begin with, points out that the defendant should have offered his slave for torture, but information about this is completely omitted. On this account he suspects that the speech was reworked significantly for written publication.[7] Carey finds this

6 Todd (2007): 56, Porter (2007): 73.

7 Dover (1968): 187–8.

argument unconvincing: offering or rejecting slave torture is an important point in other forensic speeches, and there is no reason to claim that Lysias should have omitted it from the published version. The purpose of offering a slave for examination under torture was to test the opponents' faith in their own case: rejecting the offer would imply that one had something to hide. According to Carey, the opposite is also true: not offering a slave implies that one had something to hide as well, and this is the reason for Lysias' silence.[8] Porter believes that the speech is fictional altogether. The theme (adultery) is entertaining and the narrative is well designed, but it also shows stock elements typical of stories of seduction and the like. The speech is too brief and lacks details we would expect in a forensic one. Moreover, according to Porter, the names of the protagonists are too etymologically meaningful and rare in Attica to be real: the defendant—a cuckold—is called Euphiletos, 'Beloved', whereas the murdered adulterer is called Eratosthenes, 'Vigorous-in-love'. In short, Porter thinks that Lysias 1 was just a rhetorical exercise, a display speech which was meant as a form of popular entertainment and to promote the author as a professional logographer.[9] Usher regards it as a "rather extreme conclusion that the speech as we have it is an elaborate fiction", but he accepts the suggestion that this (and possibly other) speeches of Lysias were heavily revised for written publication for the same reasons as those discerned by Porter.[10] The idea that Lysias 1 is fictional is challenged by Todd, however. He reverses the prosopographical arguments brought in by Porter: he warns against over-etymologising Greek names and provides a convincing reconstruction of the social status and possible connections with Lysias of both protagonists.[11]

A few objections of principle can be made to Porter's points. As Lavency has pointed out, brevity is not as problematic as excessive length: there are no reasons to infer that a defendant should take up all the time allotted to him.[12] A short and

8 Carey (1989): 63.

9 Porter (2007), first published in 1997.

10 Usher (2004): 118–20, but see Nicolai (2004): 23 on the stylistic difference between Lysias' epideictic and forensic speeches.

11 Todd (2007): 56–60.

12 Lavency (1964): 192.

entertaining narrative could have been appreciated by the judges,[13] and the very characterization of Euphiletos as a naïve comedy cuckold might have been functional in this respect. The law was on his side: red-handed adulterers could be killed. As far as we can tell, however, such dramatic situations were rare, and financial compensation would be the standard way to settle these matters.[14] The whole point of the trial was to establish whether Euphiletos plotted against Eratosthenes for some other reason and enticed him into his house in order to murder him lawfully.[15] This should be the reason why *ethopoiia* and narrative play such a overwhelming role in this speech. To sum up, I think it plausible that Lysias 1 is the written version of a speech produced for a real trial, and I am not able to discern any conclusive evidence that it was heavily reworked for written publication.

Demosthenes 22 (*Adversus Androtionem*) is a logographic speech which Demosthenes wrote for a certain Diodorus,[16] who, together with Euctemon, attacked Androtion, a prominent politician. He also wrote for the same client the speech *In Timocratem* about one and a half years later.[17]

Antiphon 1 (*In Novercam*) is a logographic speech of Antiphon, written for a young man whose father was allegedly poisoned by his wife, the speaker's stepmother. As Gagarin maintains, it is unlikely that this text was altered much for written publication.[18]

Public, Political

Speeches belonging to this category are less likely to have been extensively revised for publication. As I described in Chapter 3, ancient political speeches are likely to have preserved the preparatory materials that writers used to compose and learn their speeches. These might have been edited *post eventum.* Amendments, for instance, might have been made if written publication was planned. New materials

13 Cf. Ar. *V.* 776–8.
14 Todd (2007): 49–51.
15 Carey (1989): 64.
16 Kirchner, J. (1901): 263, s. v. Διόδωρος (3919).
17 Navarre-Orsini (1954): 114, Harris, E. M. (2008): 167–70.
18 Gagarin (1997): 7.

introduced at this stage could either be composed during the editing process or have been improvised during the actual delivery of the speech. In the latter case, a writer could have decided to preserve improvised bits and add them to the written draft, which he would keep, if not for merely archival purposes, as study material to work on,[19] without having considered publication.[20] From the point of view of the history of the text, Demosthenes 9 (*Philippica III*) is a most interesting case. The text of this speech is preserved in all four main manuscripts (F = Marcianus 416, 10th century, A = Monacensis 485, 10th/11th cen., Y = Parisinus 2935, 10th/11th cen., S = Parisinus 2934, 9th/10th cen.). S is widely regarded as the most authoritative of these manuscripts, which do not derive from it, but in several places it omits parts of the text of the speech. The omitted passages, whose size ranges from single words to several lines, were added in the margins by later hands. Doubts concerning the authenticity of these passages have been raised, but it now seems firmly established.[21] In 1840, Leonard Spengel put forward the idea that the shorter version handed down by S is an abridged version issued by Demosthenes himself.[22] This idea has been generally accepted, and evidence from papyri shows that both a long and a short version circulated already in antiquity.[23] The debate has mostly focused on the relative chronology of the two versions, on which of the two was the one that was delivered orally, and on how the two versions came to exist. Pasquali ascribed what he perceived as 'imperfections' to contamination between the original shorter version (that of S) and some other longer version, which resulted in the 'vulgata' longer version of F, A, and Y.[24] Treves, followed by Sealey and Wooten, argued that the longer version was the one delivered by Demosthenes in Athens, and that the shorter one was issued by Demosthenes himself (a couple of years later, according to

19 If we are to believe late anecdotal evidence, Plutarch reports that Demosthenes used to work on his own and his opponents' speeches after hearing them (*Dem.* 8.2).

20 This would be a major difference from what Dorjahn envisaged for the incorporation of improvised materials into 'final' versions of forensic speeches, see Dorjahn (1947): 72–3.

21 Sealey (1993): 234–5, Wooten (2008): 171–3.

22 Spengel (1840).

23 Pasquali (1952): 282.

24 Pasquali (1952): 273–4.

Sealey) as a pamphlet more suitable for a pan-Hellenic audience.[25] According to Wooten, the longer version might have circulated in writing shortly after it was delivered. MacDowell believes instead that Demosthenes first wrote the long version, then abridged it before delivering it: "he decided that it was too long and crossed out some passages which he might omit; after his death, when scribes were put to work at making copies for sale, one included the crossed-out passages and another omitted them, so that alternative textual traditions were created. But that is merely a guess, and other explanations remain possible".[26] Pearson, too, argues that Demosthenes' original copy contained both versions.[27] If this was the case, Trevett is probably right in maintaining that Demosthenes did not publish this speech in writing at all.[28] The two versions might have originated because of different scribal interpretations of Demosthenes' private draft which would only have been accessible to them after Demosthenes' death, probably through his nephew Democharés.[29] As to the relative chronology of the versions, I find an old suggestion of Croiset quite attractive.[30] If we assume, as MacDowell does, that Demosthenes wrote the longer version and then deleted some parts of it, it is hard to imagine why a scribe understood that those parts should not be copied and another did not, unless we were able to guess what editorial marks Demosthenes might have used for his own drafts. Croiset, instead, argues that Demosthenes added the 'omitted' parts to the margins of his draft after having delivered the speech. The 'additions' contain details and explanations, which might have been inserted in the text as Demosthenes spoke at the Assembly, and which he might have deemed worth recording. It seems more plausible that certain scribes decided to include the additions into the main text and others did not, giving birth to the manifold tradition we can trace back to antiquity itself.

25 Treves (1940), Sealey (1955): 101–4, Wooten (2008): 168–73.
26 MacDowell (2009): 353–4.
27 Pearson (1976): 150–1.
28 Trevett (1996a): 439.
29 On Democharés as the first 'publisher' of Demosthenes see Sealey (1993): 229.
30 Croiset (1955): 91.

Demosthenes 15 (*De Rhodiorum Libertate*) is an assembly speech delivered by Demosthenes in support of the Rhodian democrats who were expelled by the oligarchy established in the island by Mausolus, satrap of Caria, in 355.

Public, Epideictic

Epideictic speeches are a well attested genre. Many of them are *paignia* or display speeches meant for entertainment and disconnected from a specific occasion. As a consequence, it is very hard to tell if they were delivered at all, or if they were just meant for written circulation and/or private delivery.[31] Funeral speeches are probably the only epideictic genre we have remnants of to be connected to specific occasions.[32] As many as six Athenian funeral speeches have survived: that of Pericles (Th. 2.35–46), that of 'Aspasia' (Pl. *Mnx.* 236d–249c), Gorgias DK 82 B 5–6, Lysias 2, Demosthenes 60, and Hyperides 6. The first two are parts of non-oratorical works and should be considered representatives of epideictic speeches for private performance. The *epitaphios* of Gorgias, besides being fragmentary, is a literary exercise. Similarly, it is very unlikely that Lysias 2 (for the dead of the Corinthian War) was composed to be delivered on the purported occasion.[33] Besides, both Gorgias and Lysias (if Lysias 2 is authentic) were foreigners and unsuitable to speak on behalf of the city.[34] Demosthenes 60 is a speech for the fallen at Chaeronea in 338. Demosthenes did deliver a speech on that occasion, but the authenticity of the one preserved in the corpus has been questioned ever since Dionysius of Halicarnassus (*Dem.* 44). However, it is now widely accepted.[35] Hyperides 6, for the dead of the Lamian War and preserved by a papyrus, is probably the "nearest we

31 As in Pl. *Phdr.* 228a 5–b 5. See also Trevett (1996b): 377, n. 50.

32 Another exception might be the Olympic speech of Lysias (Lys. 33), see Gigante (1960), Todd (2007): 6, 18. This, however, is too short (about 440 words) to be included in this study, for the reasons I explain below.

33 Todd (2007): 151–2, 163–4, Petruzziello (2009): 108–11.

34 Loraux (1981): 8–9, Kennedy (1963): 156.

35 Worthington (2003), MacDowell (2009): 376–7, with further references, Usher (1999): 351, Petruzziello (2009): 213–15. The opposite position is held by Canfora (2011), who denies that any of the surviving funeral speeches corresponds to an actually pronounced one.

have to a full and genuine [funeral] speech".[36] In spite of the textual problems, I have selected this as an example of an epideictic speech which was certainly delivered in public. The unavoidable disproportion between forensic and epideictic speeches in the 'public' section of the corpus is compensated for in the 'private' section.

Private, Forensic

Plato's *Apology of Socrates* is probably the best known fictional forensic speech (actually, series of speeches). In this category fall also model speeches that were used as study materials for rhetorical or philosophical instruction. Out of such speeches, I have chosen Antiphon's *Third Tetralogy* (4). The linguistic difference between the *Tetralogies* and Antiphon's real forensic speeches is quite evident, and this, among other things, has induced some scholars to doubt that they were written by the same author. Gagarin has convincingly argued in favour of their authenticity[37] and has suggested that the explanation for such differences is to be sought in "the difference in purpose and occasion of these two 'genres'", which are ultimately connected to their mode of performance: "features found primarily or only in the *Tetralogies* seem to suggest that these were intended to be read and studied, in contrast to the court speeches, which were composed for a single oral presentation that would be judged immediately. The greater syntactical complexity of the *Tetralogies* […] suggests a reading audience, and the same features are characteristic of the earliest prose that was certainly intended to be read, the κτῆμα ἐς αἰεί […] of Antiphon's reported pupil, Thucydides. The court speeches, on the other hand, seem designed for easier comprehension in oral presentation".[38] As I mentioned above, Antiphon 1 and 4 constitute an ideal minimal pair within the corpus.

Private, Political

This category is represented in the corpus by two fictional speeches of Isocrates. Isocrates 6 (*Archidamus*) is a political speech written in the persona of Archidamus

[36] Todd (2007): 151, cf. Loraux (1981): 9.
[37] Gagarin (2002): 52–62.
[38] Gagarin (1997): 33.

III, king of Sparta, and it is not even set in the Athenian Assembly. It can be considered a political pamphlet disguised as a rhetorical exercise. Usher observes that this speech shows the highest frequency of hyperbaton in the Isocratic corpus.[39] In Isocrates 7 (*Areopagiticus*), instead, the speaker is the writer himself.

Private, Epideictic

As I mentioned in the section about public epideictic speeches, I have included in the corpus both the *epitaphios* of Pericles from the second book of Thucydides and the speech of Aspasia recited by Socrates in the *Menexenus*. The latter is notorious for its anachronisms: a passage at 245c–d clearly alludes to the peace of Antalcidas, which dates to 387, well beyond the lifetime of both Socrates and, most probably, Aspasia.[40] This, combined with the rather dismissive remarks on funeral speeches as a genre at the beginning of the dialogue (235d–e), support the view that the speech is (also) a literary *divertissement*,[41] possibly with serious intentions.[42] Cicero (*Orat.* 151) reports that an oration of Plato was used every year in Athens to praise publicly those fallen on battlefields. He cannot be alluding to anything other than the speech from the *Menexenus.* If this information is trustworthy, we might expect that this speech should not be much different from real public speeches as far as difficulty is concerned.

As the seventh private speech in the corpus, I have chosen Isocrates 9 (*Evagoras*). Isocrates addresses Nicocles, son of Evagoras, king of Salamis in Cyprus, and praises his recently dead father. Nicocles had been a pupil of Isocrates and is the first person of Isoc. 3 (*Nicocles*), as well as the addressee of Isoc. 2 (*Ad Nicoclem*).

A major issue in designing a corpus of Attic oratory is that of the degree of correspondence between the texts we possess and those that were actually delivered. Even though some orators might not have thought of writing as a means of dissemination for their speeches, but only as a composition aid, there is no guarantee

39 Usher (1999): 308.

40 Todd (2007): 152, n. 15.

41 Todd (2007): 154, n. 21 with further references.

42 See especially Kahn (1963) and Coventry (1989).

that they have pronounced the very same words we read.[43] Improvisation, for instance, might and would definitely come into play. This, again, is a known issue of historical corpora[44] and is something we have to put up with. If we are confident that an orator prepared a speech for a specific communicative situation, we have to assume that a speech composed with such a situation in mind would retain much of the linguistic appearance that made it suitable for that situation. We can posit that a speech would lose its basically 'clear' or 'obscure' character only if it were to be rewritten from scratch. Additions and omissions during performance would not decisively alter the suitability of some text to a communicative situation, at least as far as *linguistic* clarity or obscurity is concerned, although of course, extempore explanations would clarify the *contents*. If an author *never* envisaged public delivery for his text, he would not put the same effort into making the text comprehensible in a public communicative situation as one who *did* envisage it. Conversely, if an author prepared a speech for public delivery and put some effort into making the text comprehensible in such a situation, he would have to alter it radically in order to make it less comprehensible, and it is difficult to see why anyone should do so.[45]

If one wants to apply a quantitative approach to a corpus study, some attention must be paid to the size of the texts. For instance, counting five occurrences of a phenomenon in a text measuring 100 words is not the same as counting five in a text which measures 200 words. If one wishes to compare these two scores, one must divide the number of occurrences by the size of the sample in order to obtain the relative frequency of each feature for each sample. In this case, five occurrences over 100 words amount to 0.05, whereas five over 200 amount to 0.025. Problems may arise if texts score zero: whatever zero is divided by, the relative frequency would

43 Cf. Trevett (1996a): 439.

44 Claridge (2008): 247.

45 Cf. Gagarin (1999): 165, n. 13. Moreover, as Dorjahn remarks, early Athenian readers would have heard most speeches first, and this would discourage an orator from altering (for the better) too much the *style* of a speech for written publication: "contemporaries […] would never have accepted a fraud of that nature", Dorjahn (1950): 101, cf. Dorjahn (1947): 72–3. Increased *structural* complexity, which Worthington (1991) envisages for 'written' versions, need not correspond to increased *linguistic* difficulty.

always be zero, which would flatten all differences among texts of different sizes. One way of getting around this problem is to select texts of similar sizes. In general, corpora tend to contain texts of about 2000 words each. In most cases, these are samples of longer texts.[46] The texts included in the corpus range from a little less than 2000 words to almost 9000. As an 'optimal' text size, I have chosen that of Lysias 1 (about 2400 words): I have cut down larger texts to this size (starting from the beginning of each one), and I have taken shorter texts in their entirety. A theoretical concern for corpus linguists is that sampling parts of texts might conceal part of the data since different parts of texts could be linguistically different.[47] As far as the assumptions behind my corpus study go, this should not be an issue: there is no theory which predicts that certain parts of an oration should be clearer or more obscure than others just because of their position in the text.

In the table below, I give the size of each text included in the corpus and its reconstructed date of composition (together with the source consulted). The time span between the earliest (Antiphon's *Third Tetralogy*) and the most recent text (Hyperides' *Funeral Speech*) is about a century.

Text	Date	Words[48]
Lys. 1	403–c. 380[49] (?), Todd (2007)	2412
Lys. 12 (1–50)	403/2, Usher (1999)	2438
D. 22 (1–33)	355/4, Harris, E. M. (2008)	2447
Antipho 1	419–414 (?), Dover (1950)	1732
D. 9 (1–40)	342/1, Sealey (1993)	2436
D. 15	352/1–351/0 (?), Karvounis (2002)	2238
Hyp. 6	323/2, Herrman (2009)	2054[50]

46 Hunston (2008): 165–6.

47 Sinclair (1991): 19.

48 Words appearing in contracted forms (e.g. τἀυτό, κἀγώ, τοὐναντίον, τἀληθή, ϑἄτερα, etc.) have been counted as if uncontracted (τὸ αὐτό, etc.).

49 That is, the whole of Lysias' career, in the absence of specific evidence.

50 Corrupt words which have not been restored in the edition used are excluded from the count.

Pl. *Ap.* (17a–24a 4)	392–87 (?), de Strycker-Slings (1994)	2409
Antipho 4	428–419/8, Gagarin (2002)	1928
Isoc. 6 (1–44)	350s (?), Nicolai (2004)	2468
Isoc. 7 (1–33)	357, Nicolai (2004)	2469
Th. 2.35–46	after 421, Rusten (1989)	1936
Pl. *Mnx.* (236d–44b)	after 387	2406
Isoc. 9 (1–43)	after 373, Nicolai (2004)	2392
Isoc. 17 (1–40)[51]	393–1, Nicolai (2004)	2398

5.2 Methodology

In order to assess difficulty in the texts I have sampled, I have reconstructed the word-by-word integration process a native speaker would have carried out for each sentence. Let us take a sentence from Plato's *Apology* as an example:

(1) οὐδὲ γὰρ ἀναβιβάσασθαι οἷόν τ' ἐστὶν αὐτῶν ἐνταυθοῖ οὐδ' ἐλέγξαι οὐδένα
(Pl. *Ap.* 18d)
'For it is possible neither to bring up here nor to question any of them'

Initial οὐδὲ just raises the expectation for some element which it should modify,[52] and γάρ has a discourse-level function, with a scope over the entire clause.[53] The infinitive ἀναβιβάσασθαι raises the expectation both for a finite verb to be governed

[51] See 5.6.

[52] The scope of the negation is revealed by prosody, see Baltazani (2002): 107–64.

[53] As Helma Dik remarks, "most Greek particles perform functions on the level of discourse", without playing a definite role at clause-internal level, Dik, H. (1995): 38. Cf. Revuelta Puigdollers (2006): 456, 464.The distinction between particles and adverbs is at first sight quite blurry, as remarked by Revuelta Puigdollers (2006): 468–9. According to Duhoux (2006): 523, it lies in the fact that the particles never point to an extra-linguistic referent and cannot constitute a proposition on their own. The difference between νῦν and the clitic νυν, for instance, lies in the fact that νῦν refers to a specific moment in time, whereas with νυν the function of discourse marker prevails. On the other hand, νῦν can be raised to the same discourse-level function by the postponement of δέ, see Kühner–Blass–Gerth (1890–1904) 2/II: 117. On this function of δέ see Bakker (1993) and Rijksbaron (1997a).

by and for a direct object, since it is transitive. Moreover, it is a verb of motion; therefore an optional argument expressing direction or provenance (a prepositional phrase or an adverb) is also predictable.

I will represent this expectation graphically as an arrow connecting each word to the elements it requires (V stands for 'verb' and N stands for 'substantival expression'). Subscript letters are indexes: $X \rightarrow N_{a,}$ $Y \rightarrow N_{b}$ means that word *X* anticipates a substantive ('noun *a*') *and* word *Y* anticipates a different substantive ('noun *b*'). The optional argument is indicated by Arg within square brackets.

ἀναβιβάσασθαι → $V_a, N_{a,} [Arg_a]$

When οἷόν τε—a single prosodic word—is encountered in this context, that is, following an infinitive, we can argue that it anticipates an impersonal form of the verb εἰμί (on the dependency pattern of οἷός τε see Appendix 2, 3.1). Ideally, we should be able to verify this assumption by computing the frequency of a sequence like this in a corpus of natural Classical Greek. As we have seen, this is impossible, and we can only rely on our knowledge of the grammatical possibilities of the language. The verb anticipated by οἷόν τε is exactly the same as that anticipated by ἀναβιβάσασθαι. As a consequence, it has the same index. The double arrow indicates that οἷόν τε does not raise the expectation for a new element but strengthens and specifies a previous one. The arguments anticipated by ἀναβιβάσασθαι are still expected; this is indicated by curled brackets.

οἷόν τε →→ $V_a \{N_a, [Arg_a]\}$

At this stage, the finite verb ἐστίν is highly expected. The arguments of ἀναβιβάσασθαι remain pending.

ἐστίν $\{N_a, [Arg_a]\}$

Then, αὐτῶν is encountered. This genitive cannot be governed by any of the preceding words and requires some other word to provide its link to the rest of the

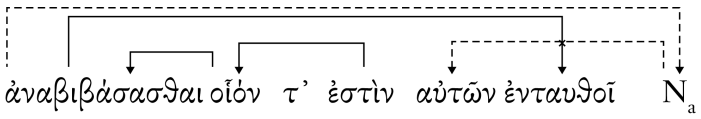
sentence (its *syntactic valence*, see Appendix 2, 1). This strengthens the expectation for the object of ἀναβιβάσασθαι which should also govern αὐτῶν. Since αὐτός is an anaphoric pronoun, the referent it points to is inferred from preceding discourse context.

αὐτῶν →→ N_a {[Arg_a]}

Further on, ἐνταυθοῖ satisfies the expectation for an adverbial expression raised by ἀναβιβάσασθαι.

ἐνταυθοῖ {N_a}

The position of this adverb implies that there is a distance in the linear order of the sentence between αὐτῶν and its governor. This means that a non-projective dependency (hyperbaton) will appear in the sentence, as the graph below shows:



As we have seen at 4.2.4, non-projective dependencies are not difficult *per se*. However, yet another element intervenes: the infinitive ἐλέγξαι, another transitive verb, which further strengthens the expectation for a noun phrase expressing a direct object:

οὐδ' ἐλέγξαι →→ N_a

The infinitive is preceded by οὐδέ, which coordinates it with the previous one, ἀναβιβάσασθαι. We can assume that this would be adequately signalled by prosody, as if it were a parenthetical: οὐδ' ἐλέγξαι should be marked off from the rest of the clause by means of pauses or a change of intonation, or both; for our purposes, it is not really relevant to reconstruct how (cf. 4.2.7). What matters here is that there is no reason to assume that this 'unexpected' infinitive would interfere with the correct integration of any constituent into the partially interpreted syntactic structure; it

would just postpone its completion.

When οὐδένα is finally encountered, it is strongly expected and should be interpreted very easily.

As it stands, there is no ground to infer that native speakers would have found this sentence difficult or unclear upon hearing. Let us now consider another example:

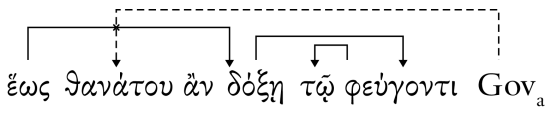
(2) ἕως θανάτου ἂν δόξῃ τῷ φεύγοντι ἄξια εἰργάσθαι (Lys. 12.37)
'Until it should be evident that things worthy of death have been committed by the defendant'

Here, θανάτου raises the expectation for a governor (anything which could govern a genitive: a verb, a noun, a postponed preposition, etc.) and, being sentence-initial, for a verb. The anticipated elements may or may not coincide (which is indicated by the symbol $\overset{?}{=}$). The expectation for a verb is matched by δόξῃ, whose grammatical form is anticipated by ἕως and ἄν. Δοκέω cannot govern a genitive, which implies that θανάτου is part of a discontinuous structure, and this is not problematic *per se*. The verb raises the expectation for a subject-argument (a noun, an infinitive, or a clause) and for an optional second argument (the indirect object in the dative):

θανάτου → $\text{Gov}_a \overset{?}{=} \text{V}_a$

δόξῃ → Arg_a [Arg_b] {Gov_a}

If no prosodic information is available, τῷ φεύγοντι becomes a most obvious candidate for a second argument of δόξῃ (**'it seems to the defendant that…'*). Incidentally, it is implausible that a native speaker would parse φεύγοντι as the governor anticipated by θανάτου—this verb would rather require an accusative than an objective genitive:



This interpretation is grammatical and semantically plausible. In discourse context,

there is nothing that would prevent a reader from building it (the entire sentence reads: ἐγὼ τοίνυν, ὦ ἄνδρες δικασταί, ἠξίουν ἱκανὰ εἶναι τὰ κατηγορημένα· μέχρι γὰρ τούτου νομίζω χρῆναι κατηγορεῖν, ἕως ἂν θανάτου δόξῃ τῷ φεύγοντι ἄξια εἰργάσθαι). Unfortunately, it does not convey the meaning intended by the author. In the absence of prosodic information, this sentence is just ambiguous. A first-sight reader would probably phrase the intonation of this sentence as follows, with τῷ φεύγοντι belonging to the same prosodic unit—whatever its phonetic reality might have been —as δόξῃ (the symbol $|_{w}$ stands for a prosodic boundary a reader might infer from merely written access to the text):

ἕως θανάτου ἂν δόξῃ τῷ φεύγοντι $|_{w}$ ἄξια εἰργάσθαι

When reading this clause aloud, one should rather place a boundary right after the verb (the symbol $|_{o}$ stands for a prosodic boundary an oral reader would probably produce based on previous knowledge of the correct syntactic structure):

ἕως θανάτου ἂν δόξῃ $|_{o}$ τῷ φεύγοντι ἄξια εἰργάσθαι

As we have seen at 4.2.7, this is a very plausible context for prosody to operate as a disambiguator. Placing a boundary in the right place would make sure that listeners assign the dative to the second part of the clause (right attachment) and would eventually interpret it as the agent of the passive perfect infinitive.

The corpus contains many other examples of potential ambiguities that could be avoided through correct prosodic phrasing. In some cases, prosody would prevent listeners from considering phrases complete *too early*—as soon as they are recognized as grammatical enough. This applies if further *satellites* follow: as a principle, unexpected governors will induce reanalysis. As above, erroneous, 'written' boundaries are indicated by $|_{w}$, and correct 'spoken' boundaries by $|_{o}$:

(3) οὐ γὰρ ᾤετο δεῖν […] τὸ πρᾶγμα καταστῆσαι, ἀλλ' ὃ δίκαιον ἦν $|_{w}$ εὑρεῖν $|_{o}$ ἅμα καὶ συμφέρον τῷ δήμῳ, νόμῳ τετάχθαι (D. 22.11)

'For he did not believe that it was necessary to settle the question, etc., but that, what it was possible to devise, which should be just and advantageous

for the people, ought to be prescribed by law' ≠ *'… but that one should find what was just'

(4) ἐχρῆν μὲν οὖν καὶ τοὺς ἄλλους ἐπαινεῖν |$_{w}$ τοὺς ἐφ' αὑτῶν ἄνδρας ἀγαθοὺς γεγενημένους (Isoc. 9.5)

'It was necessary that the others, too, should praise those who, in their own time, had become good men' ≠ '…necessary to praise the others, those who…'

I am inclined to consider the following sentence an exception to the principle that only subsequent satellites could be easily integrated into an already parsed structure:

(5) ἐμφράγματα γὰρ αὐτοὺς ποιουμένους τῶν ἁμαρτημάτων πολλοὺς τίθεσθαι τοὺς νόμους |$_{w}$ ἀναγκάζεσθαι (Isoc. 7.40)

'For setting up hindrances to criminal actions, they are forced to multiply the laws' ≠ 'they multiply the laws', with ἀναγκάζεσθαι left pending

Here, ἀναγκάζεσθαι is only potentially difficult because it occurs in *oratio obliqua* (corresponding to ἀναγκάζονται), and τίθεσθαι competes as a 'main' infinitive. On the one hand, the context primes further 'main' infinitives. On the other hand, a hearer would not necessarily know when *oratio obliqua* would turn back into *oratio recta*. If prosody should make it clear that the sentence is not complete at νόμους, a main verb would still be expected, and it should not be surprising that it appears as an infinitive.

Prosodic boundaries can also prevent listeners from considering phrases *not complete yet*, when in fact they are. This was the case with the clause from Lysias (12.37) analysed above. Here are some other examples:

(6) καὶ παράδειγμα λέγειν ἔχω τούτου |$_{o}$ πᾶσιν ὑμῖν γνώριμον (D. 15.29)

'And I can cite an example of this which is known to you all' — γνώριμον ὑμῖν, not λέγειν ὑμῖν

(7) ἀρκτέον […] |$_{o}$ τὰ τοιαῦτα ποιεῖν |$_{w}$ ἀναγκάζειν (D. 22.6)

'We must start to enforce doing such things' — ποιεῖν depends on ἀναγκάζειν, not on ἀρκτέον

(8) ὅτε μὲν ναῦς οὐκ ἐδοκεῖτ' |$_{o}$ ἀποστεῖλαι |$_{w}$ δυνήσεσθαι (D. 22.15)
'When it did not seem likely that you could dispatch ships' — ἀποστεῖλαι depends on δυνήσεσθαι, not on ἐδοκεῖτε

(9) καὶ τούτων ἁπάντων |$_{o}$ οὐδὲν ἄλλ' αἴτιον (Pl. *Mnx.* 244a)
'And nothing else is the cause of all these things' — αἴτιον τούτων ἁπάντων, not οὐδὲν τούτων ἁπάντων, with a partitive genitive

(10) τὸ πλῆθος ἦν ὑμῶν |$_{o}$ κύριον τῆς σωτηρίας τῆς ἡμετέρας (Lys. 12.26)
'The majority of your body had authority over our salvation' — κύριον τῆς σωτηρίας, not κύριον ὑμῶν

(11) τοῖς μὲν ἄλλοις Ἀθηναίοις ἱκανή μοι δοκεῖ πρόφασις εἶναι |$_{o}$ τῶν γεγενημένων εἰς τοὺς τριάκοντα ἀναφέρειν τὴν αἰτίαν (Lys. 12.28)
'It seems to me that the rest of the Athenians have a sufficient excuse for ascribing the responsibility of what happened to the Thirty' — αἰτίαν τῶν γεγενημένων, not πρόφασις τῶν γεγενημένων

(12) κατ' ἀγχιστείαν |$_{o}$ αὐτῶν γιγνόμενον (Isoc. 6.18)
'Being their own by right of kinship'

(13) χρὴ καὶ ἐμὲ ἑπόμενον τῷ νόμῳ πειρᾶσθαι |$_{o}$ ὑμῶν τῆς ἑκάστου βουλήσεώς τε καὶ δόξης τυχεῖν ὡς ἐπὶ πλεῖστον (Th. 2.35.3)
'It is necessary that I, too, following the law, try to satisfy the wishes and opinions of each of you as much as possible' — ὑμῶν depends on βουλήσεως, not on πειρᾶσθαι

(14) μεθ' οἵας πολιτείας |$_{o}$ καὶ τρόπων ἐξ οἵων (Th. 2.36.4)
'With what constitution and from which customs' — τρόπων ἐξ οἵων, not μεθ' οἵας πολιτείας καὶ τρόπων[54]

(15) ὥστε τολμᾶν τε οἱ αὐτοὶ μάλιστα καὶ περὶ ὧν ἐπιχειρήσομεν |$_{o}$ ἐκλογίζεσθαι (Th. 2.40.3)
'So that we are both most courageous and thoughtful about what we are

[54] On agreement in this type of coordinate sequences see Humbert (1960): 80.

going to undertake' — ἐκλογίζεσθαι is not governed by ἐπιχειρήσομεν

(16) οὐ στηλῶν μόνον |$_{o}$ ἐν τῇ οἰκείᾳ σημαίνει ἐπιγραφή, ἀλλὰ καὶ ἐν τῇ μὴ προσηκούσῃ ἄγραφος μνήμη […] ἐνδιαιτᾶται (Th. 2.43.3)

'Not only does the inscription of columns in their homeland give a sign, but the unwritten memory also dwells in foreign lands' — the scope of μόνον is not ἐν τῇ οἰκείᾳ **'only in their homeland',* but the entire clause

(17) σκέψασθε οὖν ὅσῳ δικαιότερα |$_{o}$ ὑμῶν δεήσομαι (Antipho 1.21)

'Now, consider how much juster my request shall be' — ὑμῶν δεήσομαι, not δικαιότερα ὑμῶν

(18) θέλω δὲ καὶ τἆλλα |$_{o}$ παραπλήσια ἀπολογηθέντα τούτοις |$_{o}$ ἐπιδεῖξαι αὐτόν (Antipho. 4.3.1)

'I wish to show that also the other things he is alleging in his defence in a similar way to these' — παραπλήσια τούτοις, not ἐπιδεῖξαι τούτοις; τἆλλα does not modify substantivized παραπλήσια, which is predicative. See (74) below on further issues.

(19) τούτων εὐλογήσονται μᾶλλον |$_{o}$ ὧν ἂν ἀμείνους σφᾶς αὐτοὺς παράσχωσιν (Isoc. 9.5)

'They will be praised more than those than whom they should have made themselves better' — μᾶλλον is structurally necessary for τούτων to be integrated in the sentence; however, the high frequency of comparatives followed by genitives might induce readers and listeners to construct ὧν *also* as depending on μᾶλλον, which would be prevented by a prosodic boundary

Similarly to (19):

(20) εὐσεβέστερον λαβὼν ἐκείνου |$_{o}$ τὴν βασιλείαν (Isoc. 9.39)

'Having obtained the throne more piously than him' — the genitive is anticipated by the comparative but could be interpreted as an adnominal modifier of βασιλείαν

(21) ἥδιον ἂν |$_{o}$ εὐλογουμένων ἀκούοιεν (Isoc. 9.6)

'They would listen with more pleasure to the praise of men' — ἥδιον modifies ἀκούοιεν, not εὐλογουμένων

(22) ὅσην πρόνοιαν ἐποιεῖτο | ₀ ἐν ἅπασιν οἷς ἐτίθει νόμοις | ₀ τῆς πολιτείας (D. 22.30)
'What care he took, in all the laws he gave, of the constitution' — the governor of τῆς πολιτείας is πρόνοιαν, not νόμοις; far attachment would only be preferred if the prepositional phrase were pronounced with a parenthetical intonation[55]

Similarly to (22):

(23) ὧν οὗτος | ₀ ἀδελφὰς πράξεις ἐνστησάμενος | ₀ τοσοῦτον διήνεγκε (Hyp. 6.35)
'Whom he, having undertaken deeds of the same kind, so far excelled' — ὧν depends on διήνεγκε, not on ἀδελφάς, and parenthetical intonation would make this clear

(24) οὐκ | ₀ ἐν τῷ ἀχρείῳ τῆς ἡλικίας | ₀ τὸ κερδαίνειν, ὥσπερ τινές φασι, μᾶλλον τέρπει, ἀλλὰ τὸ τιμᾶσθαι (Th. 2.44.4)
'In the unserviceable age, it is not gaining wealth that is more delightful, as some say, but being honoured' — the scope of οὐκ is τὸ κερδάνειν, not ἐν τῷ ἀχρείῳ τῆς ἡλικῖας; moreover, the prepositional phrase modifies τέρπει, not κερδαίνειν)

Sometimes, both early and overextended phrasing are to be avoided:

(25) καὶ ὑμᾶς ἡγοῦντο | ₀ τῶν παρόντων κακῶν | ₀ ἐπιθυμοῦντας ἀπαλλαγῆναι | ₀ περὶ τῶν μελλόντων οὐκ ἐνθυμήσεσθαι (Lys. 12.45)
'And they deemed that you, wishing to be relieved from the present evils, would not think much about the future ones'

A speaker or oral reader should make sure that ἐπιθυμοῦντας is not interpreted as a predicative participle governing the preceding genitive (*'they deemed that you desired the present evils'*) and that ἀπαλλαγῆναι is not interpreted as depending directly on ἡγοῦντο (**'they deemed that you …were relieved'*). This should be ensured by the boundaries in the first and third position, whereas the second one (which need not be realized as a pause, as I mentioned above) should prevent the genitive from being constructed with the participle.

(26) εἰ μὲν οὖν ὅλως ἐγνώκατ', ὦ ἄνδρες Ἀθηναῖοι, ὅσων ἂν βασιλεὺς ἐγκρατὴς

[55] Shattuck-Hufnagel-Turk (1996): 198.

> γένηται φθάσας ἢ παρακρουσάμενός τινας τῶν ἐν ταῖς πόλεσι, παραχωρεῖν (D. 15.8)
>
> 'Now, if you have altogether decreed, men of Athens, to abandon the lands of which the King should have come into possession, either by anticipation or having cheated some of the insiders'

Here, intonation (a 'continuation rise'?)[56] should make it clear that the clause which starts with ὅσων is not an indirect question dependent on ἐγνώκατε (*'*…you have known of how great…*'), but that something else follows, namely the infinitive παραχωρεῖν, which is the true governor of the (relative) clause starting with ὅσων and depends on ἐγνώκατε (*'*…you have decided to abandon all that the king has become ruler of…*').

The same applies to a sentence from the *Menexenus*:

(27) οὗτοι γὰρ ἐνταῦθα ἔδειξαν, στασιασάσης τῆς Ἑλλάδος περιγενόμενοι τῷ πολέμῳ, τοὺς προεστῶτας τῶν ἄλλων Ἑλλήνων χειρωσάμενοι, μεθ' ὧν τότε τοὺς βαρβάρους ἐνίκων κοινῇ, τούτους νικῶντες ἰδίᾳ (Pl. *Mnx.* 242e)

'For these proved [it] here, prevailing in war as Greece was at odds, having overpowered the leaders of the other Greeks, surpassing by themselves those with whom, back then, they had defeated the barbarians in common'

The antecedent of the relative pronoun ὧν is τούτους, which follows the relative clause (*'*…surpassing by themselves those with whom, back then, they had defeated the barbarians in common*', with a contrast between κοινῇ and ἰδίᾳ), not τοὺς προεστῶτας (*'*…having conquered the leaders of the other Greeks, with whom…*'). A strong boundary should separate χειρωσάμενοι from μεθ' ὧν, and the intonation of the relative clause should indicate that the clause containing its antecedent follows.

In some cases, evidence for the original prosodic phrasing can be inferred from the position of clitics, according to Wackernagel's law: if clitics appear in the second position in a *colon*, then *colon* boundaries should be placed before the element preceding a clitic.[57] Here are a few disambiguating Wackernagel-boundaries:

[56] "A rise in pitch on the last syllable […] which indicates to the listener that the information conveyed by the phrase is not yet completed", Devine-Stephens (1994): 413, 422.

[57] Cf. 4.2.7.

(28) ἴδοιμεν γὰρ ἄν |$_{o}$ ἐκ μὲν τῆς φαυλοτέρας εἶναι δοκούσης ἐπὶ τὸ βέλτιον ὡς ἐπὶ τὸ πολὺ τὰς πράξεις ἐπιδιδούσας (Isoc. 7.5)
'For we might see that from one which seems to be more ordinary, in many cases fortunes advance for the better' — the prepositional phrase introduced by ἐκ depends on ἐπιδιδούσας, not on ἴδοιμεν

(29) καλλίστην οὖν εἶναι πρόφασιν |$_{o}$ τιμωρεῖσθαι μὲν |$_{w}$ δοκεῖν (Lys. 12.6)
'Now, this was an excellent excuse to seem to exact punishment' — τιμωρεῖσθαι depends on δοκεῖν, not on εἶναι

(30) τούτων εὐλογήσονται μᾶλλον |$_{o}$ ὧν ἄν, κτλ. (Isoc. 9.5) = (19)

(31) ἔφη ἱκανὴ εἶναι |$_{o}$ ἐκείνη τε τὸν Φιλόνεων φίλον ποιῆσαι (Antipho 1.15)
'She said that she was capable of bringing Philoneos close to her' — ἐκείνη does not depend on ἱκανὴ εἶναι

(32) ὅσοι |$_{o}$ τῶν μὲν ἄλλων ἕνεκα (Isoc. 9.41)
'Those who, for other purposes' — τῶν ἄλλων is not a partitive which depends on ὅσοι

(33) τοὺς εἰδότας |$_{o}$ πολλά μοι χρήματ' ἐκ Πόντου κομισθέντα (Isoc. 17.40)
'Those who knew that many goods had been carried by me from Pontus' — πολλά is not the object of εἰδότας

Other ambiguities seem impossible to solve even with the aid of prosody. As we have seen at 4.2.7, prosody and syntax are not isomorphic: there is no absolute one-to-one correspondence between syntactic and prosodic hierarchies. All we can infer with some plausibility are prosodic boundaries, as we have done so far, but we cannot claim that every syntactic relationship can be represented prosodically in an unequivocal way. Not all syntactic ambiguities are a matter of grouping elements together or dividing them by means of boundaries and phrasing. Let us consider the following sentence:

(34) ὑπὸ τῶν νόμων τοὺς πολίτας ἐνεδρεύεσθαι, οἵ κελεύουσι, κτλ. (Lys. 1.49)
'For the citizens to be hindered by the laws, which order, etc.'

Here, the masculine accusative plural noun πολίτας competes with νόμων as possible antecedent of οἵ. This ambiguity can only be solved on semantic grounds when κελεύουσι is encountered. Prosodic prominence, we can argue, could be given to νόμων over πολίτας.[58] This would certainly help, but it might not be sufficient for listeners to be able to easily disambiguate, as an experiment reported in Carlson et al. (2009) shows. Upon hearing ambiguous sentences like '*Roger insisted that Alice was reliable, not Andrew*', the participants tended to understand (90% of the time) that '*Andrew*' was contrasted with '*Alice*' rather than with '*Roger*'. If '*Roger*' was made prominent by means of a pitch accent, '*Andrew*' was considered to be in contrast with it only 30% of the time. This rise is significant, but it shows that in the majority of cases, listeners would still link the upcoming element ('*Andrew*') to the closest one ('*Alice*'). I have found ambiguous relative clauses of this kind especially in Isocrates:

(35) ἐνταῦθα βελτίστους ἄνδρας γίγνεσθαι, παρ' οἷς οἱ νόμοι μετὰ πλείστης ἀκριβείας κείμενοι τυγχάνουσιν (Isoc. 7.39)
'That there is where men are better, where [*lit.* among whom] the laws happen to be fixed with the greatest precision'

Here, the antecedent of παρ' οἷς is ἐνταῦθα, but ἄνδρας is an obvious competitor.

(36) θαυμάζω δ' ὅσοι τριήρων μὲν ἡγεῖσθαι καὶ στρατοπέδων ἄρχειν ἀξιοῦσιν ἡμᾶς, ὑπὲρ ὧν μὴ καλῶς βουλευσάμενοι πολλαῖς ἂν συμφοραῖς καὶ μεγάλαις τὴν πόλιν περιβάλοιμεν (Isoc. 6.5)
'I am amazed at those who think that we are able to command warships and lead armies, about which things, if we did not make the right decisions, we would involve the city in many and large calamities'

The relative pronoun ὧν is neuter and refers to the actions described by the infinitives. Unfortunately, it is morphologically indistinguishable from a masculine pronoun, with ἡμᾶς as a plausible antecedent. Further on, in the same sentence:

(37) εἰπεῖν δ' ἃ γιγνώσκομεν περὶ ὧν ὑμεῖς μέλλετε κρίνειν οὐκ οἴονται δεῖν

[58] For instance, with a pitch rise, Devine-Stephens (1994): 479.

ἡμᾶς, ἐν οἷς κατορθώσαντες μὲν ἅπαντας ὑμᾶς ὠφελήσομεν (Isoc. 6.5)
'But they do not believe that we should say what we think about what you are about to decide, wherein if we should be right, we shall benefit you all'

Analogously, οἷς is neuter, but the nearness of ἡμᾶς would make it be perceived as masculine in the first place.

(38) τοὺς ἠσεβηκότας εἰς τοὺς παῖδας τοὺς Ἡρακλέους ἐκβεβληκότες, οἳ δικαίως ἂν ἐξ ἁπάσης τῆς οἰκουμένης ὑπερωρίσθησαν (Isoc. 6.32)
'Having cast out those who had sinned against the children of Heracles, who should have rightly been banished from the entire world'

The relative pronoun clearly refers to 'those who had sinned', but 'children of Heracles' is a more immediate antecedent.

(39) αὐτὴ ἡ δύναμις τῆς πόλεως, ἣν ἀπὸ τῶνδε τῶν τρόπων ἐκτησάμεθα (Th. 2.41.2)
'The very power of the city, which we acquired by these means'

The pronoun refers to δύναμις, but πόλεως is closer to the relative pronoun.

(40) πολλὰ καὶ ὑμεῖς ὑπὸ τῶν ἐπιβουλευσάντων ἐξηπάτησθε, ὧν οὐδενὸς αὐτοὶ δοῦναι δίκην δίκαιον ἂν εἶναι φήσαιτε (D. 15.16)
'In many things you too have been deceived by the plotters, for none of which you might say yourselves that it is fair that you should suffer punishment'

Here, ὧν refers to πολλά but may be misunderstood as referring to ἐπιβουλευσάντων.

(41) περὶ δὲ Ἀθηναίων ἀνδρῶν τοὺς λόγους ποιούμενον, οἷς, κτλ. (Hyp. 6.7)
'But giving speeches about Athenian men, for whom, etc.'

The relative pronoun refers to ἀνδρῶν, not to λόγους.

In all these examples, ambiguity stems from the temporarily equal plausibility of more than one referent to be assigned to the relative pronoun. Disambiguation happens later on when more elements of the relative clause are acquired, on the grounds of the semantics of the clause itself or of the discourse context. This implies

some processing cost, and I regard all such structures as sources of difficulty.

However, it is not always the relative pronoun that is referentially 'empty'. It often occurs that (restrictive) relative clauses define the referent to be assigned to their antecedent. In these cases, the expectation for a referent overrides the possible interference of another plausible antecedent preceding the relative pronoun.[59] In the following sentence, for instance, τούτου is referentially empty, and the expectation it raises for a postnominal modifier is stronger than the possibility that the relative pronoun ὅς should be considered co-referential with φόνον, which intervenes between τούτου and the relative clause:

(42) ἀκούετε, ὦ ἄνδρες, ὅτι αὐτῷ τῷ δικαστηρίῳ τῷ ἐξ Ἀρείου πάγου, ᾧ καὶ πάτριόν ἐστι καὶ ἐφ' ἡμῶν ἀποδέδοται τοῦ φόνου τὰς δίκας δικάζειν, διαρρήδην εἴρηται τούτου μὴ καταγιγνώσκειν φόνον, ὃς ἂν ἐπὶ δάμαρτι τῇ ἑαυτοῦ μοιχὸν λαβὼν ταύτην τὴν τιμωρίαν ποιήσηται (Lys. 1.30)
'You hear, gentlemen, that by the court of the Areopagus itself, for which it is both inherited from our fathers and assigned by us to judge the cases of murder, it has been expressly stated that he shall not be convicted of murder, who, having caught an adulterer with his wife, should take this revenge'

The same reasoning applies to declarative clauses:

(43) ἔλεγον δὲ καὶ τόδε μοι μέγα τεκμήριον περὶ τῆς χώρης ταύτης οἱ ἱρέες, ὡς ἐπὶ Μοίριος βασιλέος, κτλ. (Hdt. 2.13)
'The priests told me this, too, as a strong proof about Egypt: that during Moeris' kingdom, etc.'

In this sentence, cataphoric τόδε[60] requires a referent, provided by the declarative clause introduced by ὡς. This theoretically could have been constructed with τεκμήριον (*'a proof that'*). Now, compare the following sentence:

(44) ὡς δὲ ἐπιμισγόμενοι Αἰγύπτῳ ἐξέμαθον, μέγα μοι καὶ τόδε τεκμήριον γίνεται· κτλ. (Hdt. 2.104)

[59] Levy et al. (2012): 24.
[60] Humbert (1960): 32.

'That they learnt it by dealing with Egypt, I have this too as a strong proof: etc.'

Here, the initial declarative clause is constructed with τεκμήριον, whereas the referent required by τόδε is provided by what follows, with no risk of interference. In the next sentence, τοῦτο refers to something that was already mentioned, and ὅτι is unambiguously constructed with τεκμήριον:

(45) καὶ αὐτό μοι τοῦτο τεκμήριον δίκαιον γενέσθαι, ὅτι, κτλ. (Antipho 1.10)
'And this very thing is for me a lawful proof that, etc.'

Head-internal relative clauses (that is, relative clauses which contain the antecedent of the relative element) would be marked off by prosody,[61] and no ambiguities should arise. In the following sentence, πόλεμον should not be considered a potential antecedent:

(46) κατὰ πόλεμον αὐτὴν ἑλόντες, ˛ ὅνπερ τροπον αἱ πλεῖσται τῶν πόλεων, κτλ. (Isoc. 6.32)
'Having taken it by war, by which means most of the cities, etc.'

To sum up, in order to assess the difficulty of texts in Classical Greek one should reconstruct what expectations are set up by each word and what expectations each word satisfies when it is encountered. For each word, one should establish whether the partially interpreted structure up to that word corresponds to the correct final interpretation. If this is not the case, words which follow might either be difficult to integrate at all or could be integrated wrongly. If the wrong analysis is still grammatically plausible (and possibly also semantically different), then the structure is ambiguous. If the wrong analysis becomes ungrammatical as more words are encountered, then at some point, the comprehender will have to reanalyse the structure in order to make sense of it and establish the correct hierarchies. This has a cognitive cost and will make the structure be perceived as difficult. An important factor to take into account when reconstructing such processes is the possibility that prosody can work as a disambiguator in many cases. Therefore, it is necessary to

[61] Cf. Devine-Stephens (1994): 415 on non-restrictive relative clauses.

envisage which strategies could have been deployed by an oral reader or a speaker while delivering a text.

5.3 'I like drinking water', or: indifferent interpretations

Before turning to the discussion of difficult structures, I shall briefly describe some structures which lend themselves to more than one structural interpretation. All such interpretations are grammatically and semantically plausible but not necessarily equivalent. In the corpus, I encountered several cases of ἀπὸ κοινοῦ (the shared element is underlined with a light line, the 'sharers' are underlined with a thicker line):

(47) ταῦτα μὲν οὐ παρὰ μικρὸν ἀγωνιζόμενος παρ' ὑμῖν ἀπελυσάμην (D. 22.3)
'Well, I did away of these charges fighting [against them] in your court not by a slight majority'

(48) οὐχ ὧν ἄν τις μὴ πειρασάμενος ἀγαθῶν στερίσκηται (Th. 2.44.2)
'Not of those goods of which one, not having tried [them], should be deprived'

(49) τὸν δὲ μιαρὸν τῷ χρόνῳ ἀποδόντες φῆναι | τοῖς ἔγγιστα τιμωρεῖσθαι ὑπολείπετε (Antipho 4.4.11)
'Giving up the blood-stained one for time to reveal, leave him for his next of kin to punish'

In some cases, the attachment of certain constituents is ambiguous, but the meaning is not significantly affected:

(50) ἀξίαν δίκην τοῦ πάθους τῷ εἰργασμένῳ ἐπιθέντες (Antipho 4.1.5)
'Inflicting upon the offender a punishment worth the injury (ἀξίαν τοῦ πάθους)' ~ 'an adequate punishment for the injury (δίκην τοῦ πάθους)'

(51) ἵνα αὐτοὶ τὰ προσήκοντα πρῶτοι φαίνωνται ποιοῦντες (D. 15.25)
'So that they may themselves appear the first to be doing what is proper (πρῶτοι ποιοῦντες)' ~ 'So that they may themselves appear in the first place to be doing what is proper (πρῶτοι φαίνωνται)'

In the following sequences the possible interpretations are significantly different from a syntactic point of view, but semantically close enough not to puzzle the reader or listener who should opt for the wrong one:

(52) οὐχ ἑνὶ ἔδωκε τρόπῳ περὶ τῶν ἀδικημάτων ἑκάστων λαμβάνειν δίκην (D. 22.25)
'Not in only one way did he allow to take vengeance for each wrong (ἑνὶ τρόπῳ λαμβάνειν)' ~ 'Not to one way only did he grant… (ἑνὶ τρόπῳ ἔδωκε, cf. τῷ χρόνῳ ἀποδόντες, Antipho 4.4.11)'

(53) ἕως ἂν ἡμῖν ὁμολογήσῃ πολεμεῖν (D. 9.10)
'Until he should admit that he is at war with us (ὁμολογήσῃ πολεμεῖν)' ~ 'Until he should admit to us that he is at war (ἡμῖν ὁμολογήσῃ)'

(54) ἐπειδή τισιν οὐ μετρίως ἐδόκουν προσφέρεσθαι (D. 9.24)
'When they seemed not to be dealing moderately with some (τισιν προσφέρεσθαι)' ~ 'When they seemed to some that they were not behaving moderately (τισιν ἐδόκουν)'

(55) τῶν δ' ἔργων τὴν ὑπόνοιαν ἡ ἀλήθεια βλάψει (Th. 2.41.4)
'The truth of the facts will refute the opinion (τῶν δ' ἔργων ἡ ἀλήθεια)' ~ 'The truth will refute the conjecture of the actions (τῶν δ' ἔργων τὴν ὑπόνοιαν)'

(56) δι' ἐλαχίστου καιροῦ τύχης (Th. 2.42.4)
'In the briefest moment of destiny (δι' ἐλαχίστου καιροῦ)' ~ 'By the fortune of a briefest moment (διὰ τύχης)'[62]

(57) χρὴ τὸ ὑμέτερον σκοποῦντας ἀπολῦσαί με μᾶλλον ἢ καταλαβεῖν βούλεσθαι (Antipho 4.2.8)
'You must, considering your own interest, wish to acquit more than condemn me (βούλεσθαι ἀπολῦσαι μᾶλλον ἢ καταλαβεῖν)' ~ 'You must … acquit me more than wish to condemn me (ἀπολῦσαι μᾶλλον ἢ βούλεσθαι καταλαβεῖν)'

[62] The interpretation of this phrase is anything but straightforward, see Rusten (1986): 69–70 and (90) below.

It sometimes occurs that seemingly absolute constructions might be understood as constituents of the matrix clause, as with the 'potential' genitive absolute in the following sentence:

(58) ἧς ἡμεῖς διεφθαρμένης οὐδὲν φροντίζομεν (Isoc. 7.15)
'To the fact that it has been corrupted, we give no heed' ~ 'Having it been corrupted, we give no heed'

In this case, the genitive is more likely to be an argument of φροντίζω.[63] We can assume, for the sake of argument, that the interpretation as genitive absolute was a plausible alternative, even though this would be clearly marked off by prosody.[64] Even if it were not, we can still conclude that this distinction did not really matter much to an ancient native speaker. Let us consider, for example, an Italian phrase like *'prosciutto di Parma'* (Parma ham): in standard contemporary Italian, the preposition *di* is most commonly used to indicate possession, whereas here it indicates provenance (cf. Latin *de*). Native speakers hardly ever notice this difference in on-line production and comprehension, and this distinction matters more, if at all, to a translator who should render the phrase in a language where different interpretations correspond to completely different wording.[65]

5.4 Obscure Attic

A fundamental step towards the quantitative comparison between two groups of texts is quantifying the phenomenon one wants to study. In our case, this is not easily done. The models of language comprehension described in Chapter 4 compute precise numeric values which are intended to be a function of the actual reading times for each word, or that should correlate to the electrical activity of the

63 The government pattern of φροντίζω includes a *genitivum rei* in negative expressions (LSJ). Other would-be genitive absolutes also appear at Isoc. 9.19 (τοῦτον δὲ τὸν τρόπον τῆς πόλεως κατοικισθείσης κατὰ μὲν ἀρχὰς οἱ γεγονότες ἀπὸ Τεύκρου τὴν βασιλείαν εἶχον), 9.33 (τοσούτων γὰρ τυράννων ἐν ἅπαντι τῷ χρόνῳ γεγενημένων οὐδεὶς φανήσεται, κτλ.), Th. 2.35.1 (ἀνδρῶν ἀγαθῶν ἔργῳ γενομένων ἔργῳ καὶ δηλοῦσθαι τὰς τιμάς).

64 Devine-Stephens (1994): 422, 430.

65 See, for instance, Kurzová (2006): 350–1.

brain measured during comprehension tasks. In the absence of a corpus of natural Attic, we cannot even try to apply mathematical techniques to compute such values, which are based on structural probabilities. Moreover, not all of the factors which have been shown to play a role in language comprehension have been implemented in one and the same standard mathematical model.

Analyses of sentences such as those at 5.2 enable us to estimate whether, in oral comprehension, each word:

— would have been attached to the wrong element;
— would have been surprising, especially if the preceding part of the sentence was parsed wrongly;
— would have been assigned the wrong referent;
— would have been assigned the wrong thematic role (for instance, in cases where an accusative could be interpreted as an agent or a patient with a transitive verb in the infinitive);
— would have been assigned the wrong function (for instance, verbs with a substantival function could be interpreted as predicates).

All such misrepresentations are normally temporary and are disambiguated as soon as the syntactic and semantic structures are made clearer by the subsequent linguistic input or as soon as the constructed meaning is found to clash with the right one, if this correction is inferable from the discourse context. Disambiguation is carried out through subconscious reanalysis of the wrongly parsed structures. This results in an increase in cognitive activity.[66] We are not in the position to tell how big such an increase must have been for a native speaker of Attic for every type of wrong analysis, nor can we reconstruct with some certainty in correspondence with what element in the linear order of the sentence such increases would have been detectable (in correspondence with the wrongly interpreted word, or with the disambiguator, or somewhere else, due to the so-called spillover effect, which is observed when cognitive processes induced by a word are still active when a new

[66] As shown by ERP studies as, most recently, Meltzer-Braun (2013). In reading this corresponds to several different strategies, see von der Malsburg–Vasishth (2011).

word is encountered and increase the cognitive load of the new word without being directly determined by it). If we wish to calculate a numeric indicator of difficulty, it is not viable to operationalize it as a function of a psycholinguistic measurement of this kind. Instead, I will operationalize difficulty by counting every reanalysis operation which we can reconstruct to have occurred during a native speaker's comprehension process. Words can be reanalysed more than once, as partial interpretations build up. Reanalysis can involve several factors (syntax, semantics, reference) at the same time. For instance, a word could be reassigned a referent and attached to a different syntactic structure, in which case two cognitive operations can be discerned. Such reanalyses would have induced some experimentally measurable effect, but this operationalization of difficulty is independent from the assessment of such effects. The difficulty score for each text will be calculated starting from the number of the reanalysis operations reconstructed for that text. This means that it is possible that some texts might score zero. If our measure of difficulty were a function of an observable psycholinguistic measure, this would be absurd: no text is processed at *no* cognitive load. As mentioned above (5.1), the possible occurrence of zeros recommends building a corpus out of texts of roughly the same size.

In the following sections, I survey the structures which I reconstruct as difficult in each text. In order to simplify my descriptions, I will use the notation described at 5.2 whenever necessary:

→	stands for	*raises the expectation for*
→→	"	*strengthens the expectation for*
X_y	"	*element* y *belonging to type* X
[X]	"	*optional element*
{X}	"	*element anticipated by a preceding word*
$X \stackrel{?}{=} Y$	"	*elements* X *and* Y *are anticipated, but may coincide*
$\|_o$	"	*prosodic boundary which an oral reader would produce based on previous knowledge of the correct syntactic structure*
$\|_w$	"	*prosodic boundary a reader might infer from merely written access to the text*

N	stands for	*substantive*
V	"	*predicate*
Arg	"	*argument*
Gov	"	*governor*
Inf	"	*infinitive*

Tables at the end of each section summarize all the reanalysis operations which this methodology reconstructs. These are classified as instances of 'syntactic reanalysis', if the reanalysed element is assigned another position in the hierarchy of the sentence, 'referential reanalysis', if the element (normally a pronoun) is assigned a different referent, or 'semantic reanalysis', if the element is assigned a different thematic role,[67] gender,[68] or word class.

5.4.1 Lys. 1

In this speech, I have detected only one difficulty, which I have already discussed above as sentence (34): ὑπὸ τῶν νόμων τοὺς πολίτας ἐνεδρεύεσθαι, οἳ κελεύουσι, κτλ. (Lys. 1.49). Here, the disambiguation would consist of the reassignment of the referent to the relative pronoun οἳ, which would more likely be considered referring to τοὺς πολίτας than τῶν νόμων. This would be triggered by the semantics of κελεύουσι, which contrast with those of ἐνεδρεύεσθαι.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
οἳ		×	
Total reanalyses:	1		

5.4.2 Lys. 12, 1–50

(59) ἔμπειρος γὰρ ὢν ἐτύγχανον τῆς οἰκίας (Lys. 12.15)
'For I happened to know the house'

Both ἔμπειρος and ἐτύγχανον might govern τῆς οἰκίας, and chances are that near attachment would be privileged (*'for, being expert, I obtained the house'*). The genitive

67 Haupt et al. (2008).

68 On the role of gender in syntax processing see, among others, Padovani et al. (2005).

will have to be reanalysed syntactically. On the other hand, once the participle is constructed with ἐτύγχανον, readers or listeners would no longer expect another argument of the verb in the genitive, which should somehow limit this effect—compare sentences (19) and (20).

Another potentially ambiguous structure appears in a passage which some editors have regarded as corrupt:

(60) εἰ μὲν γάρ τις ἦν ἐν τῇ πόλει ἀρχὴ ἰσχυροτέρα αὐτῆς, ὑφ' ἧς αὐτῷ προσετάττετο παρὰ τὸ δίκαιον ἀνθρώπους ἀπολλύναι, ἴσως ἂν εἰκότως αὐτῷ συγγνώμην εἴχετε (Lys. 12.29)

'For if there had been in the city a stronger power than it, by which it was ordered to him to destroy people against justice, perhaps you would have pardoned him with some reason'

The context preceding this sentence (27–28) reads as follows:

καὶ μὴν οὐδὲ τοῦτο εἰκὸς αὐτῷ πιστεύειν, εἴπερ ἀληθῆ λέγει φάσκων ἀντειπεῖν, ὡς αὐτῷ προσετάχθη. οὐ γὰρ δήπου ἐν τοῖς μετοίκοις πίστιν παρ' αὐτοῦ ἐλάμβανον. ἔπειτα τῷ ἧττον εἰκὸς ἦν προσταχθῆναι ἢ ὅστις ἀντειπών γε ἐτύγχανε καὶ γνώμην ἀποδεδειγμένος; τίνα γὰρ εἰκὸς ἦν ἧττον ταῦτα ὑπηρετῆσαι ἢ τὸν ἀντειπόντα οἷς ἐκεῖνοι ἐβούλοντο πραχθῆναι; ἔτι δὲ τοῖς μὲν ἄλλοις Ἀθηναίοις ἱκανή μοι δοκεῖ πρόφασις εἶναι τῶν γεγενημένων εἰς τοὺς τριάκοντα ἀναφέρειν τὴν αἰτίαν· αὐτοὺς δὲ τοὺς τριάκοντα, ἐὰν εἰς σφᾶς αὐτοὺς ἀναφέρωσι, πῶς ὑμᾶς εἰκὸς ἀποδέχεσθαι;

'And further, supposing he is truthful in asserting that he spoke in opposition, observe that there is no reason to credit his plea that he acted under orders. For I presume it was not where the resident aliens were concerned that they sought to put him to the proof. And then, who was less likely to be given such orders than the man who was found to have spoken in opposition and to have declared his opinion? For who was likely to be less active in this service than the man who spoke in opposition to the object that they had at heart? Again, the rest of the Athenians have a sufficient excuse, in my opinion, for attributing to the Thirty the responsibility for what has

> taken place; but if the Thirty actually attribute it to themselves, how can you reasonably accept that?' (transl. W. R. M. Lamb)

In this passage, Lysias aims at proving that Eratosthenes' claim that he merely executed the orders of the other Thirty is untenable. It is true that he implies that the Thirty *did* promote criminal behaviour, but his point is that Eratosthenes *is* one of the Thirty, and that *nobody* commanded him to behave as he did. Lysias remarks this right after the sentence examined here: νῦν δὲ παρὰ τοῦ ποτε καὶ λήψεσθε δίκην, εἴπερ ἐξέσται τοῖς τριάκοντα λέγειν ὅτι τὰ ὑπὸ τῶν τριάκοντα προσταχθέντα ἐποίουν; (*'but whom, in fact, will you ever punish, if the Thirty are to be allowed to state that they merely carried out the orders of the Thirty?'*, transl. W. R. M. Lamb).

Sentence (60) has caused some embarrassment to modern interpreters when it came to the pronoun αὐτῆς. If interpreted as anaphoric, this pronoun would lack a referent in the preceding discourse context. As a consequence, it would rather be interpreted as a demonstrative pronoun of identity. In this case, it would easily be constructed as the antecedent of the relative clause which follows, which would mean that *there was* some power under whose orders Eratosthenes acted (*'…a stronger power than the very one by which it was ordered to him…'*). This seems to contrast suspiciously sharply with the point Lysias endeavoured to make in the previous paragraphs. Some editors have tried to remove this seeming paradox by expunging αὐτῆς (Dobree) or by amending it into αὐτῶν (Baiter – Sauppe). If one accepts such emendations, the relative pronoun would unambiguously be interpreted as referring to ἀρχή. This noun would point to a generic referent but clearly distinct from the Thirty. The relative clause would immediately be interpreted as a perfectly grammatical 'counterfactual' clause (relative clauses of this kind regularly require a historical tense *without* ἄν):[69] *'if there had been in the city a stronger power, by which it was ordered to him, etc. [but there was none]'*. Reiske's amendment ταύτης (adopted by Carey) does not seem a substantial improvement on the transmitted text, and only appears to contribute a pronoun which is more unambiguously demonstrative.

[69] Cf. Humbert (1960): 241.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
τῆς οἰκίας	×		
Total reanalyses:	1		

5.4.3 D. 22, 1–47

Let us start from two interesting false positives:

(61) τῇ τε πόλει βοηθεῖν οἴεται | δεῖν (D. 22.1)
'He thinks he must assist the city'

Here, an early interpretation might analyse βοηθεῖν as dependent on οἴεται, in which case δεῖν would be surprising. A truly representative corpus of Attic would help determine if this would be the case. In the extant Classical Greek texts up to the 4th century BC, οἴεται δεῖν as a collocation occurs 37 times. In four cases, it is preceded by an infinitive governed by δεῖν. The reverse order, δεῖν οἴεται, occurs only once. Infinitives preceding οἴεται and depending directly on it occur 9 times. Most importantly, *all* such occurrences are found in a clause-final position: οἴεται seems to govern infinitives which precede it *only when it is the last word in a clause*, which would be prosodically marked. A similar picture emerges with the imperfect ᾤετο, both with δεῖν and with χρῆναι: ᾤετο δεῖν appears 45 times (most of which in Demosthenes), in 9 out of which it is (not necessarily immediately) preceded by an infinitive governed by δεῖν. The reverse order appears only once. Similarly, ᾤετο χρῆναι appears 9 times (mostly in Xenophon). In four such occurrences, this phrase is preceded by an infinitive governed by χρῆναι. The reverse order never appears. Infinitives other than δεῖν or χρῆναι immediately precede and are governed by ᾤετο 6 times. In these cases, ᾤετο is followed by either a subordinate clause (once), or by a coordinate clause (once), by a Wackernagel-boundary (once), or it is at the end of a subordinate clause (once). It occurs twice that arguments of the infinitive appear right after ᾤετο, and the clause ends immediately afterwards. Preposed infinitives are governed by δεῖν following ᾤετο five times, and twice by χρῆναι following ᾤετο. In one case, the infinitive preceding ᾤετο is governed by τολμῆσαι instead (D. 32.9). In

the corpus surveyed in this study, the same pattern shows up with other persons of οἶμαι as well (πολεμεῖν ᾠόμεθα δεῖν, D. 9.25; εἰπεῖν […] οὐκ οἴονται δεῖν ἡμᾶς, Isoc. 6.5; τυραννεῖν ᾠήθη δεῖν, Isoc. 9.26). Judging from these figures, I would be inclined to believe that, in the absence of a prosodic boundary right after οἴεται, which would determine a clause-final intonation pattern, it is likely that a hearer would have expected δεῖν to appear and be the governor of βοηθεῖν.[70]

(62) ἔστι δὴ πρὸς ταῦτ' οὐ χαλεπὸν τὰ δίκαι' ὑμῖν ἀντειπεῖν (D. 22.9)
'It is not difficult for you to oppose the right arguments to these'

In this sentence, ὑμῖν modifies the predicate ἔστι χαλεπόν but is dangerously far from it and close to ἀντειπεῖν, which can govern a dative (*'contradict someone'*). The construction with the dative is in complementary distribution with that with πρός, but the position of ὑμῖν might induce an interference effect. Moreover, the dative can be found in transitive constructions (*'object something to someone'*, cf. Ar. *Ec.* 569–70: ὥστε σέ τέ μοι μαρτυρεῖν καὶ τοῦτον αὐτὸν μηδὲν ἀντειπεῖν ἐμοί). However, ὑμῖν is also the notional subject of ἀντειπεῖν (see Appendix 2, 1). Case attraction, which is partially grammaticalized in Greek, has been shown to have a powerful influence on on-line parsing, overriding the assignment of thematic roles on a strictly morphosyntactic basis.[71] On these grounds, we can argue that ὑμῖν could be interpreted semantically as the subject of ἀντειπεῖν.[72]

(63) Μειδίου κατηγοροῦντος τῆς βουλῆς καὶ ἄλλων τινῶν (D. 22.10)

70 In this case, prosody would not disambiguate between near and far attachment, which it cannot do effectively, but it would set up the expectation for a frequent collocation.

71 Bayer et al. (2001): 506–7. German case attraction corresponds to *inverse* case attraction in Greek: in constructions like *'dass der Mann*$_{\text{NOM}}$ *dem*$_{\text{DAT}}$ *ich vorher begegnet bin etwas geschickt hat'*, the initial nominative—which is the subject of the main verb (*geschickt hat*)—is sometimes erroneously interpreted as a dative, to which it is attracted by the coreferential relative pronoun *dem.* This hinders on-line processing. We can assume that this negative effect on comprehension is the mirror image of what must have been the case with *direct* attraction for native speakers of Classical Greek.

72 Compare a clause like ἅσσα δέ σφι ποιέειν οὐκ ἔξεστι (Hdt. 1.138). Here the dative of a personal pronoun is distant from the impersonal verb which governs it, but it precedes the infinitive of which it is the notional subject.

'As Meidias accused the Council, together with others…'

The conjunction of a coordinate element to one preceding a verb is fairly common. Here, however, *καὶ ἄλλων τινῶν* happens to be in the same inflexional case as the other argument of the verb, *τῆς βουλῆς*, which interferes. Prosody would not disambiguate between near (*τῆς βουλῆς καὶ ἄλλων τινῶν*) and far (*Μειδίου καὶ ἄλλων τινῶν*) attachment, and *ἄλλων τινῶν* should be reanalysed in order to be assigned the correct thematic role.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
καὶ ἄλλων τινῶν	×		×
Total reanalyses:	2		

5.4.4 Antipho 1

This speech presents no difficulties of a kind which would not be eased by prosody. These are listed and discussed at 5.2.

5.4.5 D. 9, 1–40

(64) *περὶ ὧν Φίλιππος, ἀφ' οὗ τὴν εἰρήνην ἐποιήσατο, οὐ μόνον ὑμᾶς, ἀλλὰ καὶ τοὺς ἄλλους ἀδικεῖ* (D. 9.1)

'About the wrongs which Philip, ever since he concluded the peace, commits not only against us, but also against the others'

In this sequence, *ἀφ' οὗ* is used as a 'quasi lexicalized' set phrase. However, *οὗ* could be mistaken as referring to Philip and should be reanalysed both referentially and semantically (as a neuter).

This is the only difficulty I have detected in this text.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
οὗ		×	×
Total reanalyses:	2		

5.4.6 D. 15

The only ambiguous structure in this speech is that mentioned at (40): πολλὰ καὶ ὑμεῖς ὑπὸ τῶν ἐπιβουλευσάντων ἐξηπάτησθε, ὧν οὐδενὸς αὐτοὶ δοῦναι δίκην δίκαιον ἂν εἶναι φήσαιτε (D. 15.16). The relative pronoun would likely be misinterpreted as masculine—and so would οὐδενὸς—and referring to τῶν ἐπιβουλευσάντων.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
ὧν		×	×
οὐδενὸς			×
Total reanalyses:	3		

5.4.7 Hyp. 6

Once again, the only difficulty in this speech is due to a relative pronoun whose antecedent is ambiguous: περὶ δὲ Ἀθηναίων ἀνδρῶν τοὺς λόγους ποιούμενον, οἷς, κτλ. (Hyp. 6.7) = (41). This time, both candidate antecedents are masculine.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
οἷς		×	
Total reanalyses:	1		

5.4.8 Pl. Ap. 17a–24a 4

(65) ἔπειτά εἰσιν οὗτοι οἱ κατήγοροι πολλοὶ καὶ πολὺν χρόνον ἤδη κατηγορηκότες, ἔτι δὲ καὶ ἐν ταύτῃ τῇ ἡλικίᾳ λέγοντες πρὸς ὑμᾶς ἐν ᾗ ἂν μάλιστα ἐπιστεύσατε, παῖδες ὄντες ἔνιοι ὑμῶν καὶ μειράκια, ἀτεχνῶς ἐρήμην κατηγοροῦντες ἀπολογουμένου οὐδενός (Pl. *Ap.* 18c 4–8)
'Then, these accusers are many and have been making accusations for a long time already, besides speaking to you also at this age, when you would have believed the most, some of you being children and adolescents, just accusing by default without anybody speaking in defence'

Κατηγοροῦντες is coreferential to οὗτοι and belongs syntactically to the main clause. However, ὄντες intervenes, which refers to παῖδες and belongs to the relative clause.

Syntactic and referential reanalysis would be immediate, due to the semantics of κατηγοροῦντες.

(66) ὧν ἐγὼ οὐδὲν οὔτε μέγα οὔτε μικρὸν πέρι ἐπαΐω (Pl. *Ap.* 19c 4–5)
'About which things I know nothing, either big or small'

The initial relative pronoun depends on πέρι but might be understood as a predicative genitive dependent on οὐδέν (*'none of which'*). Sequences where initial ὧν is followed by a pronoun and οὐδέν are not hard to find in Attic prose. In quite a few instances, initial ὧν is an argument of a verb which appears further on in the clause (e.g. ὧν ὑμῖν οὐδὲν πώποτ' ἐμέλησεν, Isoc. 8.115, 15.303, εἰς τοὺς θεωμένους ἢ εἰς τοὺς παιδαγωγοὺς, ὧν οὐδεὶς οὐδὲν κατηγορεῖ, Antipho 3.3.7, ἐγένετό ὑμῖν ὧν ἐγὼ οὐδὲν δέομαι μεμνῆσθαι, And. 1.80,[73] ὧν οὗτος οὐδὲν ἐνθυμούμενος, D. 26.18). A counterexample, with ὧν as a partitive which depends on οὐδέν, is ὧν ὑμῖν οὐδὲν ἀποβέβηκεν (Lys. 28.14). An early interpretation of ὧν as a partitive was indeed possible. The pronoun would be attached to οὐδέν, or alternatively, it might raise the expectation for a verb governing a partitive genitive (this would have to be assessed in a representative corpus of natural Attic). As πέρι is encountered, it would enforce syntactic and semantic reanalysis. Theoretically, this preposition might also be constructed with the preceding accusatives. However, anastrophe of πέρι with the accusative is extremely rare in prose, and this interpretation would not probably be the most immediate one.

(67) οὐχ ὡς ἀτιμάζων λέγω τὴν τοιαύτην ἐπιστήμην (Pl. *Ap.* 19c 5–6)
'And I am speaking not bringing dishonour upon such knowledge'

Τὴν τοιαύτην ἐπιστήμην is the object of ἀτιμάζων, not of λέγω, but it is very likely that the latter interpretation would be the most immediate and that prosody would not disambiguate between near and far attachment. As a consequence, ἐπιστήμην ought to be reanalysed syntactically.

(68) τούτων γὰρ ἕκαστος, ὦ ἄνδρες, οἵός τ' ἐστὶν ἰὼν εἰς ἑκάστην τῶν πόλεων

[73] See MacDowell (1962): 119 on textual problems in this passage.

> τοὺς νέους—οἷς ἔξεστι τῶν ἑαυτῶν πολιτῶν προῖκα συνεῖναι ᾧ ἂν βούλωνται—τούτους πείθουσι τὰς ἐκείνων συνουσίας ἀπολιπόντας σφίσιν συνεῖναι χρήματα διδόντας καὶ χάριν προσειδέναι (*Ap.* 19e 4–20a 2)
>
> 'Each of these men [*sc.* the sophists], gentlemen, travelling to each city as much as he can, convinces the young—to whom it is possible to associate for free with whoever they may wish among their fellow citizens—they convince these to associate with them, having given up the association with those men, for money, and to be grateful besides'

I have already examined this sentence at 4.2.6. The plural demonstrative pronoun οὗτοι refers first to the sophists, then to the young, but before the latter occurrence, a relative clause appears where both οἷς and ἑαυτῶν refer to the young. Moreover, οἱ νέοι is the implied subject of the subsequent relative clause (ᾧ ἂν βούλωνται). The main verb, πείθουσι, is in the third person plural, just like βούλωνται. The agreement with ἕκαστος is notional. Arguably, chances are that οἱ νέοι would still be perceived as the subject of πείθουσι and that τούτους might have turned up to be interpreted as referring to 'the sophists', as initial τούτων, rather than 'the young'. If this were the case, it would have to be reanalysed referentially.

(69) ταὐτόν μοι ἔδοξαν ἔχειν ἁμάρτημα, ὅπερ καὶ οἱ ποιηταὶ (Pl. *Ap.* 22d 5)
'They seemed to me to have the same fault as the poets, too'

Here, μοι is right between two potential governors, ταὐτόν (*'the same as me'*) and ἔδοξαν. Normally, a prosodic boundary would disambiguate. Here, however, μοι is a clitic and should not be separated from the orthotonic word it follows. This is disambiguated by the relative clause, which would induce the syntactic reanalysis of the dative first person pronoun.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
κατηγοροῦντες	×	×	
ὧν	×		×
ἐπιστήμην	×		
τούτους		×	
μοι	×		
Total reanalyses:	7		

5.4.9 Antipho 4

It is generally acknowledged that the language and style of the *Tetralogies* is quite different from that of Antiphon's actual court speeches. It is not surprising that the results of my analysis of the *Third Tetralogy* are quite different from those for the speech against the stepmother (Antipho 1), where I could not identify any structures which would likely require reanalysis (5.4.4).

Let us start from the very first sentence of the first speech:

(70) νενόμισται μὲν ὀρθῶς τὰς φονικὰς δίκας περὶ πλείστου τοὺς κρίνοντας ποιεῖσθαι διώκειν τε καὶ μαρτυρεῖν κατὰ τὸ δίκαιον (Antipho 4.1.1)
'It is rightly established that those who judge cases of murder consider of the highest importance to prosecute and give evidence according to justice'

νενόμισται μὲν ὀρθῶς →	Inf_a	The impersonal verb sets up the expectation for an infinitive.
τὰς φονικὰς δίκας →→	Inf_a	Such expectation is reinforced by this noun phrase in the accusative.

If it were possible to reconstruct two distinct intonation patterns for clauses which start with the subject and clauses which start with the direct object in Classical Greek, as is the case with German, then we could argue that a hearer would predict the thematic role of τὰς φονικὰς δίκας at this stage.[74]

περὶ πλείστου →→	Inf_a (ποιοῦμαι)	This phrase further strengthens the expectation for an infinitive.

The table below displays the instances of περὶ πλείστου for each verb it modifies in Classical Greek up to the 4th century—as is relevant to this study—and in later Greek up to the 3rd century AD. It is very likely that this phrase would anticipate a form of ποιοῦμαι.

[74] Weber et al. (2006).

περὶ πλείστου:	Class. (up to 4th cen. BC)	Hellen. (3rd BC–3rd AD)
ἡγοῦμαι	1 (Th.)	–
μελετῶ	1 (Th.)	–
ποιοῦμαι	46	42
ἄγω	1 (Hdt.)	1 (D.S.)
εἰμί	6 (4 × Antipho, 1× And., 1 × Pl.)	1 (J.)

In Byzantine Greek, besides ποιοῦμαι, περὶ πλείστου is used with ἡγοῦμαι, ἄγω. εἰμί, νομίζω, ἔχω, σκοποῦμαι, γίγνομαι, σπουδάζω, and quite often with τίθημι.

τοὺς κρίνοντας →→ Inf_a This substantivized participle would be interpreted as an argument (possibly, the subject) of the expected infinitive. Possibly, τὰς δίκας could also be interpreted as the object of this participle. Since an infinitive of ποιοῦμαι is predicted, and when constructed with περὶ πλείστου, this verb requires a direct object, τὰς δίκας would be interpreted as a common direct object to both verbs.

ποιεῖσθαι The infinitive satisfies all expectations. Up to this point, the sentence would be interpreted as *'It is rightly established that those who judge [them] regard the cases of murder as most important'*.

At this stage, διώκειν would be completely unexpected, and it seems unlikely that it would be interpreted immediately as the object of ποιεῖσθαι: both are unarticulated present infinitives and could rather be interpreted as coordinate to one another. This would call for syntactic and semantic reanalysis. Once διώκειν should be interpreted correctly, it would enforce reanalysing syntactically τὰς δίκας as the object of κρίνοντας alone.

(71) εἰκότως ἂν ἀγανακτεῖν μοι δοκῶ (Antipho 4.2.1)
'It seems to me that I am reasonably indignant'

Ἀγανακτέω can govern a dative of the person (*'to be vexed at someone'*). Just as is the case with sentence (69), it is difficult to posit a disambiguating prosodic boundary between an enclitic pronoun and the orthotonic word which precedes it. Syntactic reanalysis will be triggered by the meaning of δοκῶ, namely by the fact that it appears in the first person (for instance, εἰκότως ἂν ἀγανακτεῖν μοι δοκεῖτε would have made sense).

(72) ἀποκτεῖναι ὑμᾶς με πείθοντες (Antipho 4.2.7)
'Persuading you to kill me'

Gagarin's comment on this passage reads: "the interlocking word order is confusing —perhaps intentionally so".[75] Leaving aside the question of intentionality, he is absolutely right. As it stands, ὑμᾶς would most likely be interpreted as the object of ἀποκτεῖναι, and με as that of πείθοντες, which would give the opposite meaning of the intended one. Both accusatives must be reanalysed syntactically.[76]

(73) καὶ τῶν ἄλλων ἁπάντων τῶν κατηγορουμένων ἀπολύεται τῆς αἰτίας (Antipho 4.4.2)
'He is acquitted of the charge of all the other accusations, too'

The early genitive τῶν ἄλλων ἁπάντων τῶν κατηγορουμένων could be interpreted as an argument of ἀπολύεται (*'he is also cleared of all the other accusations'*), with τῆς αἰτίας remaining pending and inducing the syntactic reanalysis of the previous genitive.

(74) θέλω δὲ καὶ τἆλλα παραπλήσια ἀπολογηθέντα τούτοις ἐπιδεῖξαι αὐτόν (Antipho. 4.3.1) = (18)

The deponent verb ἀπολογέομαι virtually always takes the *person* as its subject in fifth- and fourth-century Attic and is often used transitively with the accusative of

[75] Gagarin (1997): 167.

[76] See Appendix 2, 2.9 on the government pattern of verbs of commanding.

the thing said in one's defence. This pattern also applies to its 'passive' tenses. The aorist passive of this verb only occurs five times in Greek before Polybius and always governs the nominative of the person. The perfect passive appears in an impersonal construction once in Andocides (ἀπολελόγηταί μοι ἱκανῶς, 1.70) and once with the thing said as its subject (ταῦτα δή, ἔφην, ἀπολελογήσθω ἡμῖν, Pl. *R.* 607b 1). Elsewhere, it shows the same construction as the other tenses. We can infer from these data that it is unlikely that a native speaker would have interpreted ἀπολογηθέντα as a neuter plural referring to τἄλλα, which would generate ambiguity and make αὐτόν unexpected (in this case the sentence would be interpreted as *'I wish to show that the other things similar to these have been alleged'*). The correct interpretation as an accusative singular masculine referring to αὐτόν should have been reasonably straightforward.

(75) τὸν μὲν καθαρὸν ὑμέτερον ἡγεῖσθε εἶναι ἀπολύειν τῆς αἰτίας (Antipho 4.4.11)
'You should think that it is your duty to acquit of the charge the innocent'

Here, even prosodic phrasing would not prevent attaching τὸν καθαρὸν to the closer candidate governor (εἶναι) and interpreting it as its subject (*'think that the innocent is yours'*). Ἀπολύειν would induce the reanalysis of καθαρόν as its direct object (syntactic and semantic reanalysis). Moreover, ὑμέτερον must be reanalysed as neuter and referring to ἀπολύειν instead of τὸν καθαρόν.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
τὰς φονικὰς δίκας	×		
διώκειν	×		×
μοι	×		
ὑμᾶς	×		
με	×		
κατηγορουμένων	×		
τὸν καθαρόν	×		×
ὑμέτερον		×	×
Total reanalyses:	11		

5.4.10 Isoc. 6, 1–44

(76) ἵν' ἐξ ἁπάντων ὑμῖν ἐξῇ τῶν ῥηθέντων ἑλέσθαι τὰ συμφορώτατα (Isoc. 6.4)
'In order that it may be possible for you to choose, among all things said, the most expedient'

When ἐξ ἁπάντων is encountered, it is not clear whether it is masculine or neuter. An early interpretation might consider it to have its scope over ὑμῖν (*'it may be possible to you among all'*). The gender of ἁπάντων is disambiguated by ῥηθέντων. The disconnection of the prepositional phrase from the pronoun also makes it clear that it must modify some subsequent element *('it may be possible to you, from all things said…'*). The discontinuity involving ἁπάντων and ῥηθέντων is not *per se* problematic. As we have seen, this speech is particularly rich with relative pronouns whose antecedent is ambiguous:

(77) θαυμάζω δ' ὅσοι τριήρων μὲν ἡγεῖσθαι καὶ στρατοπέδων ἄρχειν ἀξιοῦσιν ἡμᾶς, ὑπὲρ ὧν μὴ καλῶς βουλευσάμενοι πολλαῖς ἂν συμφοραῖς καὶ μεγάλαις τὴν πόλιν περιβάλοιμεν, εἰπεῖν δ' ἃ γιγνώσκομεν περὶ ὧν ὑμεῖς μέλλετε κρίνειν οὐκ οἴονται δεῖν ἡμᾶς, ἐν οἷς κατορθώσαντες μὲν ἅπαντας ὑμᾶς ὠφελήσομεν (Isoc. 6.5) = (36) and (37)

(78) τοὺς ἠσεβηκότας εἰς τοὺς παῖδας τοὺς Ἡρακλέους ἐκβεβληκότες, οἳ δικαίως ἂν ἐξ ἁπάσης τῆς οἰκουμένης ὑπερωρίσθησαν (Isoc. 6.32) = (38)

In the first of these sentences, ὧν must be reanalysed as a neuter referring to τριήρων μὲν ἡγεῖσθαι καὶ στρατοπέδων ἄρχειν instead of a masculine referring to ἡμᾶς, which entails referential and semantic reanalysis. Further on, exactly the same thing applies to οἷς, which would be easily mistaken as referring to ἡμᾶς instead of ἃ γιγνώσκομεν. In the latter sentence, οἳ must be reanalysed as referring to τοὺς ἠσεβηκότας instead of τοὺς παῖδας τοὺς Ἡρακλέους.

(79) τούτους γὰρ εὑρήσομεν, ἐξ ὧν μὲν τοῖς ἄλλοις προσέταττον, πρὸς τοὺς Ἕλληνας διαβληθέντας, ἐξ ὧν δὲ τοὺς ὑβρίζοντας ἠμύναντο, παρὰ πᾶσιν ἀνθρώποις εὐδοκιμήσαντας (Isoc. 6.42)

> 'For we shall find these, since they dictated to the others, reproached by the Greeks, and since they defended themselves against the arrogant enemies, famous among all men'

Here, the first occurrence of ἐξ ὧν might incur the same reference assignment ambiguities as the sentences above.'Εξ ὧν is used idiomatically, but it follows τούτους, a very strong candidate antecedent. However, the referent assigned to τούτους is very clearly the Athenians, as the context shows: καὶ μάλιστ' ἐπὶ τῆς πόλεως τῆς Ἀθηναίων. τούτους γὰρ εὑρήσομεν, κτλ. This is not decisive for the 'lexicalized' interpretation of ἐξ ὧν: even when the antecedent is fully specified, ἐξ ὧν is used as a 'true' relative, as in ταύτας τὰς συνθήκας, ἐξ ὧν ψευδομένους ἡμᾶς ἔμελλεν ἐξελέγξειν *'this agreement, drawing on which he would accuse us of lying'* (Isoc. 17.32). In this sentence, the first occurrence of ὧν would have had to be reanalysed as neuter and assigned an implicit referent. The latter occurrence of the phrase would be primed by the former, and reanalysis would not be necessary.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
ἐξ	×		
ἁπάντων			×
ὧν		×	×
οἷς		×	×
οἵ		×	
ὧν		×	×
Total reanalyses:	9		

5.4.11 Isoc. 7, 1–33

(80) διαγνῶναι ποτέραν ἄν τις δέξαιτο τῶν μερίδων τούτων τοῖς παισὶ τοῖς αὑτοῦ καταλιπεῖν (Isoc. 7.5)

'To decide which of these parts one might accept to leave to his own children'

διαγνῶναι	→	Object_a	This verb anticipates either a direct object or a substantive clause.

ποτέραν ἄν τις	→	V_a, $Partitive_a$	The interrogative pronoun reveals that the object of διαγνῶναι is a clause and anticipates both a partitive and a transitive verb. Τις reveals that ποτέραν is a pronoun, not an adjective.
δέξαιτο	→	$[N_a]$ $\{Partitive_a\}$	This verb is transitive and would be interpreted as the governor of ποτέραν. It might take a dative as an optional argument (*'at s.o.'s hands'*).
τῶν μερίδων τούτων		$\{[N_a]\}$	The partitive is highly expected.
τοῖς παισὶ τοῖς αὑτοῦ			This dative might be constructed with δέξαιτο.
καταλιπεῖν			The infinitive is unexpected and would induce syntactic reanalysis of ποτέραν and of the dative.

(81) ταύτῃ καὶ τοὺς νόμους καὶ τοὺς ῥήτορας καὶ τοὺς ἰδιώτας ἀναγκαῖόν ἐστιν ὁμοιοῦσθαι, καὶ πράττειν οὕτως ἑκάστους οἵαν περ ἂν ταύτην ἔχωσιν (Isoc. 7.14)

'It is necessary that the laws, the public speakers and the private citizens conform to it [sc. the constitution], and that everyone fare according to what sort of constitution they should have'

The earliest possible governor of ταύτῃ is ἀναγκαῖόν ἐστιν. With this interpretation, ταύτῃ would also become the notional subject of ὁμοιοῦσθαι, a verb which can be used transitively in the middle (*'it is necessary for this to compare the laws, etc.'*). The weak semantics would trigger the reanalysis of ταύτῃ as an argument of ὁμοιοῦσθαι

and the assignment of the correct thematic role (subject) to the accusatives.

(82) τοιοῦτο μνημεῖον ἐν τῷ τόπῳ τῆς αὑτῶν ἀρετῆς καὶ σωφροσύνης ἐγκατέλιπον (Isoc. 7.38)
'They left such a monument, in that place, of their own virtue and wisdom'

Here, chances are that τῆς αὑτῶν ἀρετῆς καὶ σωφροσύνης would be interpreted as adnominal genitives modifying τῷ τόπῳ. Genitives modifying τόπος are generally of a partitive kind (as in τόπος τῆς οἰκουμένης) rather than adnominal (*'place of something' = 'place where something is|happened'*) in the classical authors. Incidentally, the phrase τόπος τῆς ἀρετῆς is only found in Christian texts.[77] Here, it is likely that ἀρετῆς itself would trigger both syntactic and semantic reanalysis.

(83) τὴν δὴ τοιαύτην, ὥσπερ εἶπον, κυρίαν ἐποίησαν τῆς εὐταξίας ἐπιμελεῖσθαι, ἥ τοὺς μὲν οἰομένους ἐνταῦθα βελτίστους ἄνδρας γίγνεσθαι, παρ' οἷς οἱ νόμοι μετὰ πλείστης ἀκριβείας κείμενοι τυγχάνουσιν, ἀγνοεῖν ἐνόμιζεν (Isoc. 7.39)
'Such thing, as I said, they put in charge of taking care of discipline, which considered that those who believed that there is where men are better, where [*lit.* among whom] the laws happen to be fixed with the greatest precision, were wrong'

At first, εὐταξίας would be constructed with κυρίαν (*'in charge of discipline'*) and would have to be reanalysed when ἐπιμελεῖσθαι is encountered. Moreover, it is a closer possible antecedent of ἥ than τοιαύτην, causing confusion in reference assignment. The same applies to παρ' οἷς, cf. (35) above: ἐνταῦθα is referentially empty (underspecified *'there'*) and could well anticipate the restrictive relative clause introduced by παρ' οἷς, but the absence of an explicit antecedent showing grammatical agreement (as παρ' ἀνθρώποις would have been) and the presence of a strong competitor which does show grammatical agreement like ἄνδρας reinforces the case for referential confusion.

[77] For instance, Olymp. Diaconus (6th cen.), *Comm. in Lamentationes* 93.725.48: ἀπὸ τοῦ τόπου τῆς ἀρετῆς εἰς τὸν τῆς κακίας.

(84) οὐ γὰρ τοῖς ψηφίσμασιν ἀλλὰ τοῖς ἤθεσι καλῶς οἰκεῖσθαι τὰς πόλεις, καὶ τοὺς μὲν κακῶς τεθραμμένους καὶ τοὺς ἀκριβῶς τῶν νόμων ἀναγεγραμμένους τολμήσειν παραβαίνειν, τοὺς δὲ καλῶς πεπαιδευμένους καὶ τοῖς ἁπλῶς κειμένοις ἐθελήσειν ἐμμένειν (Isoc. 7.41)

'For it is not because of the decrees, but because of morals that the cities are well directed, and badly reared people will dare to transgress even those laws that are recorded with great precision, whereas well educated people will be disposed to obey even those that are laid out in a simple manner'

The partitive genitive *τῶν νόμων* appears in attributive position, which is abnormal.[78] The partitive itself is necessary to disambiguate between the referents indicated by the substantivized participles, which are morphologically identical (*τοὺς μὲν κακῶς τεθραμμένους* [*ἀνθρώπους*], *τοὺς ἀκριβῶς τῶν νόμων ἀναγεγραμμένους*). As a matter of fact, *νόμους* could have been used as a direct object, with attributive *ἀναγεγραμμένους* as its modifier (*τοὺς ἀκριβῶς ἀναγεγραμμένους* [*νόμους*]). This, however, would have prevented the homoeoteleuton effect produced by the actual phrasing. Here, *τοὺς μὲν κακῶς τεθραμμένους* could have primed another substantivized participle, and it is likely that *τῶν νόμων* would have set up the expectation for a verb which can govern a genitive. Had one such verb occurred, the genitive would have been attached directly to it (as in *τοὺς τῶν νόμων μιμνήσκοντας*, for instance). Since *ἀναγράφω* violates this expectation, *τῶν νόμων* must be reanalysed as an adjunct to a substantival expression instead of an argument of a verb.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
ποτέραν	×		
τοῖς παισί	×		
ταύτῃ	×		
τοὺς νόμους, κτλ.			×
τῆς αὐτῶν ἀρετῆς	×		×
τῆς εὐταξίας	×		
ἥ		×	
παρ' οἷς		×	
τῶν νόμων			×
Total reanalyses:	10		

[78] Schwyzer–Debrunner (1950) II: 115.

5.4.12 Th. 2.35–46

In his treatise on Thucydides, Dionysius of Halicarnassus asserts that in his days (1st century BC) very few men are able to understand the whole of Thucydides, and even these readers would need a linguistic commentary to understand certain bits.[79] He reports that some objected that Thucydides had *become* difficult just because of the time lapse which separated him from themselves and that his language must have been familiar to his contemporaries. Dionysius does not agree with this opinion, and he remarks that Thucydides' style was unique among his contemporaries as well and that this idiosyncrasy was deliberately sought by Thucydides himself (*Th.* 51). Indeed, it might well be the case that Thucydides has *always* been difficult.

(85) ἐμοὶ δὲ ἀρκοῦν ἂν ἐδόκει εἶναι ἀνδρῶν ἀγαθῶν ἔργῳ γενομένων ἔργῳ καὶ δηλοῦσθαι τὰς τιμάς, οἷα καὶ νῦν περὶ τὸν τάφον τόνδε δημοσίᾳ παρασκευασθέντα ὁρᾶτε, καὶ μὴ ἐν ἑνὶ ἀνδρὶ πολλῶν ἀρετὰς κινδυνεύεσθαι εὖ τε καὶ χεῖρον εἰπόντι πιστευθῆναι (Th. 2.35.1)

'To me, it would have seemed to be sufficient that of men who became good in action, with action be also shown the honours, such as you see right now with this public funeral, and that the risk should not be run, at the hands of one man only, that the virtues of many be believed according as he speaks well or poorly'

An ambiguity can be detected at the very beginning of this sentence: ἐμοί depends on ἐδόκει, but ἀρκοῦν can govern a dative as well. If the shorter attachment were preferred, the sentence would come to mean *'it would have seemed to be sufficient to me that, etc.'*, which, being counterfactual, implies the opposite (*'but it is not [sufficient to me]'*). According to Wackernagel's law, the position of ἄν entails that a prosodic boundary followed ἐμοὶ δέ. This prosodic phrasing reveals that, from the point of view of pragmatics, the 'extraclausal' position of this *colon* represents "a superordinate point of view under which the assertions are made".[80] From a syntactic point of view, however, prosody would fail to resolve this ambiguity: as we

79 See De Jonge (2008): 111.

80 Matić (2003): 580.

have seen, prosody can separate words which do not belong to the same syntactic phrase, but it cannot easily explicate their hierarchy.[81] As a consequence, the dependency of ἐμοί will have to be reanalysed as soon as the meaning becomes clearer.

Let us focus on the latter coordinate infinitive clause (καὶ μὴ … πιστευθῆναι).

καὶ μὴ	→	Inf_a	The relative clause would have been uttered with a parenthetical

intonation, and it would be clear that καί would coordinate an element to δηλοῦσθαι, which primes an infinitive.

ἐν ἑνὶ ἀνδρὶ	→→	Inf_a	
πολλῶν	→	$Gov_a \stackrel{?}{=} \{Inf_a\}$	
ἀρετὰς	→→	Inf_a	ἀρετάς reinforces the expectation for an infinitive and satisfies that for a governor set up by πολλῶν.

A critical point is encountered when κινδυνεύεσθαι is encountered: an infinitive is strongly expected, but if this were interpreted as the expected one, the semantics would not work. Passive forms of κινδυνεύω only admit as their subject expressions denoting 'risk' or 'danger'.[82] This cannot be the case with a subject like ἀρετάς. An early interpretation of ἀρετάς as the subject of κινδυνεύεσθαι would induce immediate reanalysis and set up the expectation for another element which should both govern ἀρετάς and be the subject of κινδυνεύομαι. Such a strong expectation is satisfied by πιστευθῆναι.

(86) νομίζων ἐπί τε τῷ παρόντι οὐκ ἂν ἀπρεπῆ λεχθῆναι αὐτὰ καὶ τὸν πάντα ὅμιλον καὶ ἀστῶν καὶ ξένων ξύμφορον εἶναι ἐπακοῦσαι αὐτῶν (Th. 2.36.4)
'Thinking that on the present occasion it would not be inappropriate that

[81] Shattuck-Hufnagel-Turk (1996): 199.

[82] Kühner–Blass–Gerth (1890–1904) 2/1: 126, Smyth (1956), §1749.

these things should be said, and that it is profitable for the entire assemblage of both citizens and foreigners to listen to them'

Just as in the previous sentence, an infinitive is anticipated by καί and the subsequent accusative τὸν πάντα ὅμιλον. This expectation is met by εἶναι, with ξύμφορον which might be interpreted as a masculine instead of a neuter, in which case the meaning would be *'…that the entire assemblage is convenient'*. This adjective may govern an infinitive; therefore, ἐπακούσαι would not be unexpected from a syntactic point of view. However, the semantics would be puzzling: *'…convenient to listen to them'*. At this stage, reanalysis is necessary: ἐπακοῦσαι must be reinterpreted as the subject of εἶναι, ὅμιλον as that of ἐπακοῦσαι, and ξύμφορον as a neuter referring to ἐπακούσαι.

(87) κατὰ δὲ τὴν ἀξίωσιν, ὡς ἕκαστος ἔν τῳ εὐδοκιμεῖ, οὐκ ἀπὸ μέρους τὸ πλέον ἐς τὰ κοινὰ ἢ ἀπ' ἀρετῆς προτιμᾶται (Th. 2.37.1)
'As regards public esteem, according to what one is distinguished in, not by rotation rather than virtue, one is preferred for public office'

(88) πιστεύοντες οὐ ταῖς παρασκευαῖς τὸ πλέον καὶ ἀπάταις ἢ τῷ ἀφ' ἡμῶν αὐτῶν ἐς τὰ ἔργα εὐψύχῳ (Th. 2.39.1)
'Trusting not in preparations and deceit more than in our very own courage for the actions'

In these cases, the potential difficulty stems from the usage of τὸ πλέον *'the most part'*. This collocation (that is, the exact sequence 'τὸ πλέον') is found either when πλέον is an adjective modifying a noun (as in τὸ πλέον μέρος), or when πλέον is substantivized, in which case it often governs a partitive genitive (τὸ πλέον τοῦ στρατεύματος), or as an adverbial phrase meaning *'for the most part'*. Here, Thucydides uses it adverbially, with an object of comparison introduced by ἤ (*'more than'*). In a few cases (Th. 1.42.4, 2.101.1, Pl. *Grg.* 483c 4–5, 7, 489a 3, *Lg.* 781b 3, X. *Cyr.* 1.3.18, Isoc. 12.244), πλέον is preceded by the article only because it is used adverbially and modifies an articular infinitive. Table 1 at page 165 shows the distribution of the occurrences of τὸ πλέον up in fifth- and fourth-century writers.

It is noteworthy that τὸ πλέον never occurs with an adverbial function in 'quasi-

spoken' Attic. Judging from these figures, it appears that Thucydides was particularly fond of this usage of τὸ πλέον, which he often employed with an absolute meaning. The object of comparison is only expressed by ἤ, and it either follows τὸ πλέον immediately, or it occurs after a verb (for instance, τοῖς σώμασι τὸ πλέον ἰσχύουσα ἢ τοῖς χρήμασιν, 1.121.3). The only exceptions are the two passages discussed here (and one case in Xenophon: ἀλλὰ μὴν ἀνδρείαν γε τὸ πλέον μετ' εὐβουλίας ἢ μετὰ κινδύνων ἐπεδείκνυτο, καὶ σοφίαν ἔργῳ μᾶλλον ἢ λόγοις ἤσκει, *Ages.* 11.9). Given this picture, I suspect that the most immediate interpretation of τὸ πλέον in these passages would be as an absolute adverbial, which would make the object of comparison surprising in both cases. This interpretation would result in the reassessment of the semantics of τὸ πλέον (absolute to comparative). The effect I envisage would be similar to that of an English sentence like *'things will change for the better, I think, than us'*. Further on, another ambiguity concerns the assignment of the correct referent to a relative pronoun: αὐτὴ ἡ δύναμις τῆς πόλεως, ἣν ἀπὸ τῶνδε τῶν τρόπων ἐκτησάμεθα (Th. 2.41.2) = (39) above. Here, the trigger for disambiguation is the meaning of ἐκτησάμεθα, for which πόλις is not a plausible direct object in this context.

(89) καὶ οὐκ ἂν πολλοῖς τῶν Ἑλλήνων ἰσόρροπος ὥσπερ τῶνδε ὁ λόγος τῶν ἔργων φανείη (Th. 2.42.2)
'And, not for many among the Greeks would praises appear equivalent to the actions, like theirs'

Here, the initial dative πολλοῖς requires a governor. The earliest option is ἰσόρροπος, an adjective meaning *'well balanced',* which normally governs a dative (*'in equipoise with not many among the Greeks'*). Further on in the sentence, τῶν ἔργων would be constructed most immediately with λόγος. It would take φανείη to trigger the reanalysis of πολλοῖς, and as a consequence, that of λόγων. Moreover, πολλοῖς would likely be reanalysed as the indirect object of φανείη, while it is a dative of advantage.[83] This semantic ambiguity is not trivial and should entail reanalysis.

[83] Rusten (1989): 163.

Table 1: τὸ πλέον in Classical Greek

	Adjective	Substantivized	Substantivized, with partitive	Substantivized, in prepositional phrase (ε(ἰ)ς/πρὸς/ἐπὶ τὸ πλέον)	Adverbial (absolute)	Adverbial (comparative)
Herodotus			1		1	
Euripides	1	2	1			
Thucydides		1	6	5	9	immediately followed by ἤ: 7 followed by ἤ, with a verb intervening: 4 followed by ἤ, with another constituent intervening: 2
Xenophon		1		1		immediately followed by a genitive: 1 followed by ἤ, with another constituent intervening: 1
Plato		7				
Demosthenes		1				
Aeschines				1		

Let us now come to what has been considered one of the hardest sentences in all of Greek literature. Rusten has devoted a full article to its interpretation.[84] I shall not repeat his arguments, which I accept (as well as his text) and shall apply in both the translation and the discussion.

(90) τῶνδε δὲ οὔτε πλούτου τις τὴν ἔτι ἀπόλαυσιν προτιμήσας ἐμαλακίσθη οὔτε πενίας ἐλπίδι, ὡς κἂν ἔτι διαφυγὼν αὐτὴν πλουτήσειεν, ἀναβολὴν τοῦ δεινοῦ ἐποιήσατο· τὴν δὲ τῶν ἐναντίων τιμωρίαν ποθεινοτέραν αὐτῶν λαβόντες καὶ κινδύνων ἅμα τόνδε κάλλιστον νομίσαντες ἐβουλήθησαν μετ' αὐτοῦ τοὺς μὲν τιμωρεῖσθαι, τῶν δὲ ἐφίεσθαι, ἐλπίδι μὲν τὸ ἀφανὲς τοῦ κατορθώσειν ἐπιτρέψαντες, ἔργῳ δὲ περὶ τοῦ ἤδη ὁρωμένου σφίσιν αὐτοῖς ἀξιοῦντες πεποιθέναι, καὶ ἐν αὐτῷ τὸ ἀμύνεσθαι καὶ παθεῖν μᾶλλον ἡγησάμενοι ἢ τὸ ἐνδόντες σῴζεσθαι, τὸ μὲν αἰσχρὸν τοῦ λόγου ἔφυγον, τὸ δ' ἔργον τῷ σώματι ὑπέμειναν καὶ δι' ἐλαχίστου καιροῦ τύχης ἅμα ἀκμῇ τῆς δόξης μᾶλλον ἢ τοῦ δέους ἀπηλλάγησαν (Th. 2.42.4)

'Among them, neither anyone, preferring the further enjoyment of wealth, became coward, nor, for the hope, pertaining to poverty, that he might still even become rich escaping it, postponed the danger: taking the vengeance over the enemies as more desirable than those things, and considering at the same time this the best of the risks, they resolved, at this risk, on the one hand to win over these, on the other to wish for those things, committing to hope the uncertainty of future success, but resolving to rely on themselves in the action for what was by then before their eyes, and believing that in this there were [*i.e.* that this implied] resisting and suffering more than being safe having surrendered, they fled from a disgraceful fame, but faced their task with their body, and at the same time, through the fortune of a moment, at the height of glory more than of fear, they passed away'

At the very beginning, τῶνδε δὲ οὔτε πλούτου τις shows a very similar pattern to that at the beginning of (85): ἐμοὶ δὲ ἀρκοῦν ἂν ἐδόκει, κτλ. Here, we can posit a Wackernagel-boundary on the basis of τις (with οὔτε being prepositive): τῶνδε δὲ | οὔτε πλούτου τις. As with (85), this would not prevent considering τῶνδε an adnominal modifier of πλούτου (instead of a partitive modifying τις, with a different

[84] Rusten (1986).

syntactic and semantic function) in the first place. Further on, ἔτι should be correctly assigned to πλουτήσειεν if a Wackernagel-boundary was placed before διαφυγών because of anaphoric ἀυτήν; διαφυγὼν ἀυτήν could be pronounced with parenthetical intonation. Word order in the subsequent clauses is pretty linear, with a very unproblematic hyperbaton appearing at σφίσιν αὐτοῖς ἀξιοῦντες πεποιθέναι. One of the most controversial parts of this sentence is ἐν αὐτῷ τὸ ἀμύνεσθαι καὶ παθεῖν. Rusten amends the original but very problematic reading τῷ into τὸ and interprets the passage as a verbless substantive clause, as it were ἐν αὐτῷ ἐνεῖναι τὸ ἀμύνεσθαι, κτλ., with ἐν αὐτῷ as a complement. This works very well, but it might still have caused some comprehension problems to a native ear: ἐν αὐτῷ normally requires being governed by a verb, and too many infinitives appear as potential candidates before it becomes clear that ἡγήσαμενοι does not govern any object infinitive but governs ἐν αὐτῷ as an object complement. It is likely that the prepositional phrase might be constructed with any infinitive and would have to be reanalysed further on. Another difficult passage is ἅμα ἀκμῇ: as Rusten points out, many interpretations, including the scholion to this passage, have taken for granted that ἅμα governs the subsequent dative. He convincingly argues that this is not the case and that ἅμα is to be understood with the previous phrase. If this interpretation is correct, we can posit a prosodic boundary separating the two (besides, in correspondence with a hiatus): καὶ δι' ἐλαχίστου καιροῦ τύχης ἅμα | ἀκμῇ τῆς δόξης, κτλ. As to δι' ἐλαχίστου καιροῦ τύχης, interpreters have debated whether it is καιροῦ which governs τύχης or the opposite—see example (56) above. To our purposes, this question is completely irrelevant. The most immediate interpretation for a native speaker would have been determined by expectations deriving from linguistic experience. Nothing would enforce a reanalysis; if there had been any obvious elements which revealed that one interpretation is to be discarded, scholars would not have needed to debate over it. A hearer would have simply stuck to the first interpretation.

(91) τὴν ὠφελίαν, ἣν ἄν τις πρὸς οὐδὲν χεῖρον αὐτοὺς ὑμᾶς εἰδότας μηκύνοι (Th. 2.43.1)

> 'The advantage, about which one could speak at length to you who know it not worse yourself'

This relative clause is phrased in such a way as to induce a relatively high number of reanalyses:

ἣν ἄν τις	→	V_a	The relative pronoun in the accusative sets up the expectation for a transitive verb, ἄν removes the possibility that it might be a present indicative, τις restricts the range to finite moods.
πρὸς	→	$N_a\{V_a\}$	
οὐδὲν		$\{V_a\}$	οὐδέν would satisfy the expectation set up by πρός. As a phrase, πρὸς οὐδέν means *'in vain'*.
χεῖρον		$\{V_a\}$	χεῖρον could be understood as an adverb (*'worse'*), but only if a prosodic boundary separated it from οὐδέν. If not, it would be understood as a modifier: *'for nothing worse'*.
αὐτοὺς	→(?)	$V_b(?) \stackrel{?}{=} \{V_a\}$	This accusative might be surprising, since the direct object of the expected verb is already expressed by ἥν. It might raise the expectation for a verb which admits a double accusative construction. It might also be assigned *'the enemies'* as a referent (the previous clauses read: τοὺς δὲ λοιποὺς χρὴ ἀσφαλεστέραν μὲν εὔχεσθαι, ἀτολμοτέραν δὲ μηδὲν ἀξιοῦν τὴν ἐς <u>τοὺς πολεμίους</u> διάνοιαν ἔχειν, σκοποῦντας μὴ λόγῳ μόνῳ τὴν ὠφελίαν).

ὑμᾶς	{V_a}	This word would also be surprising, but it would most likely be constructed immediately with αὐτούς (as in all 13 occurrences of αὐτοὺς ὑμᾶς from the 5th and 4th centuries).
εἰδότας	{V_a}	The participle would be attached to ὑμᾶς.
μηκύνοι		Eventually, the expectation for a finite transitive verb (either an optative, a subjunctive, or a historical tense of the indicative) is satisfied.

At this stage, the semantics of πρός become clear. As a consequence, ὑμᾶς is reanalysed as the accusative introduced by the preposition. Οὐδὲν χεῖρον will be reanalysed as an adverb modified by the negative.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
ἐμοί	×		
ἀρετάς	×		
ὅμιλον	×		
ξύμφορον			×
ἐπακοῦσαι	×		
τὸ πλέον			×
τὸ πλέον			×
ἦν		×	
πολλοῖς	×		×
ἔργων	×		
τῶνδε	×		×
ἐν αὐτῷ	×		
πρός			×

οὐδέν	×		×
χεῖρον	×		×
ὑμᾶς	×		
Total reanalyses:	20		

5.4.13 Pl. Mnx. *236d–44b*

(92) ναυσὶ δὲ τῆς τε θαλάττης ἐκράτει καὶ τῶν νήσων ὥστε μηδὲ ἀξιοῦν ἀντίπαλον αὐτῷ μηδένα εἶναι (Pl. *Mnx.* 239e 4–40a 2)
'With his ships he [*sc.* Darius] ruled over both the sea and the islands, so that nobody even dared to be his rival'

ἀξιοῦν	→	[N_a] $Object_a$ [Inf_a]	The infinitive might either anticipate a subject or infer it from the main clause (Darius). It also anticipates an object and/or a supplementary infinitive, whose notional subjects should correspond to the object.[85]
ἀντίπαλον	→→	Inf_a [$Object_a$]	The adjective indicates that ἀξιοῦν governs an infinitive, for it could not be constructed as a complement or object of ἀξιοῦν itself. This could also suggest (erroneously) that the subject must be inferred.
αὐτῷ		{Inf_a}	The dative is predicted by the argument structure of ἀντίπαλον.

[85] Rijksbaron (2002): 100–2.

μηδένα	→→	Inf_a	This could be interpreted either as an adjective modifying ἀντίπαλον, which should be substantivized, or as the object of ἀξιοῦν. The latter analysis indicates that the expected infinitive is copulative, as ἀντίπαλον would be interpreted as a complement.
εἶναι			The infinitive is highly expected, and the clause would be interpreted as *'so that he did not even expect anybody to be a rival to him'.*

The construction of the intended meaning requires the reanalysis of μηδένα as the subject of ἀξιοῦν.

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
μηδένα			×
Total reanalyses:	1		

5.4.14 Isoc. 9, 1–43

(93) ὅταν ὁρᾷ τοὺς μὲν περὶ τὰ Τρωϊκὰ καὶ τοὺς ἐπέκεινα γενομένους ὑμνουμένους καὶ τραγῳδουμένους, αὑτὸν δέ, κτλ. (Isoc. 9.6)
'When he should see those who lived at the time of the Trojan war and those who lived even earlier are celebrated in songs and tragedy, but himself, etc.'

The contiguity of ὑμνουμένους καὶ τραγῳδουμένους to γενομένους could induce a hearer to interpret the former two coordinate participles as asyndetically coordinate to γενομένους as well (which may act as a syntactic prime), as it were [γενομένους + ὑμνουμένους + καὶ τραγῳδουμένους]. This construction is not rare in Attic prose.[86]

[86] Cf. Denniston (1954): 290.

The entire group would then be interpreted as coordinate to τοὺς μὲν περὶ τὰ Τρωϊκά, with the general (but wrong) meaning *'those at the time of the Trojan war and those who lived, who were being celebrated in song, and who were being celebrated in tragedy even earlier'*. Instead, ὑμνουμένους καὶ τραγῳδουμένους are predicative and depend directly on the verb (ὁρᾷ). It is likely that an intonation boundary would separate γενομένους from this group, but as we have seen, prosody does not disambiguate decisively between far and near attachment. Far attachment would be determined by the syntactic reanalysis of ὑμνουμένους (τραγῳδουμένους would not need to be reanalysed syntactically, since it remains coordinate to ὑμνουμένους). Analogously, semantic reanalysis should occur once for the entire coordinate phrase, which must be reinterpreted as predicative, rather than independently for each coordinate participle.

(94) τῶν μὲν οὖν τὰς πατρικὰς βασιλείας παραλαβόντων τίς οὐκ ἂν τοὺς Εὐαγόρου κινδύνους προκρίνειεν; (Isoc. 9.35)
'Who would not prefer the perils of Evagoras over those who inherited the kingships of their fathers?'

The earliest interpretation of παραλαβόντων would be as a partitive governed by τίς (*'who among those…'*). Once again, even a prosodic boundary before τίς would not make far attachment preferable. The initial genitive must be reinterpreted as an argument of προκρίνειεν, which implies both semantic and syntactic reanalysis.

(95) φανήσομαι γὰρ οὐκ ἐκ παντὸς τρόπου μεγάλα λέγειν προθυμούμενος, ἀλλὰ διὰ τὴν τοῦ πράγματος ἀλήθειαν οὕτω περὶ αὐτοῦ θρασέως εἰρηκώς (Isoc. 9.39)
'For I will seem to have spoken so boldly about him not with the desire of being magniloquent in any way, but because of the reality of the facts'

Here, προθυμούμενος modifies εἰρηκώς and contrasts with διὰ τὴν τοῦ πράγματος ἀλήθειαν. I cannot think of a possible oral phrasing of this sentence which would prevent interpreting προθυμούμενος as contrasting with εἰρηκώς, though, which is semantically inaccurate (*'…seem not to be desiring* [in the future, at the same time as

φανήσομαι] … *but to have spoken'*). Near attachment would have προθυμούμενος depend on φανήσομαι, and ἀλλά introducing εἰρηκώς. Both of these syntactic dependencies will have to be reanalysed. Semantically, προθυμούμενος must be reinterpreted as a conjunct participle instead of a predicative one (which would be an argument of φανήσομαι).[87]

	Syntactic reanalysis	Referential reanalysis	Semantic reanalysis
ὑμνουμένους	×		×
παραλαβόντων	×		×
προθυμούμενος	×		×
εἰρηκώς	×		
Total reanalyses:	7		

5.5 Quantitative analysis

Table 2 summarizes the results of the analysis of the texts in the corpus. As I stated above (5.1), the hypothesis I wish to test is that the Attic public speeches are easier than the Attic private speeches, with difficulty being operationalized as the number of reanalyses per word for each text. In statistical terms, this is the *alternative hypothesis* (H_1). In this study, each group of texts (public and private) is a sample of its respective population (all the Attic public speeches, all the Attic private speeches). Each sample consists of seven *data points* (the scores of each text). In statistical terms, the alternative hypothesis states that the *mean difficulty score* of the *population* of the Attic public speeches is *lower* than the mean difficulty score of the *population* of the Attic private speeches:

$$H_1: \textit{mean difficulty}_{\text{Attic Public Speeches}} < \textit{mean difficulty}_{\text{Attic Private Speeches}}$$

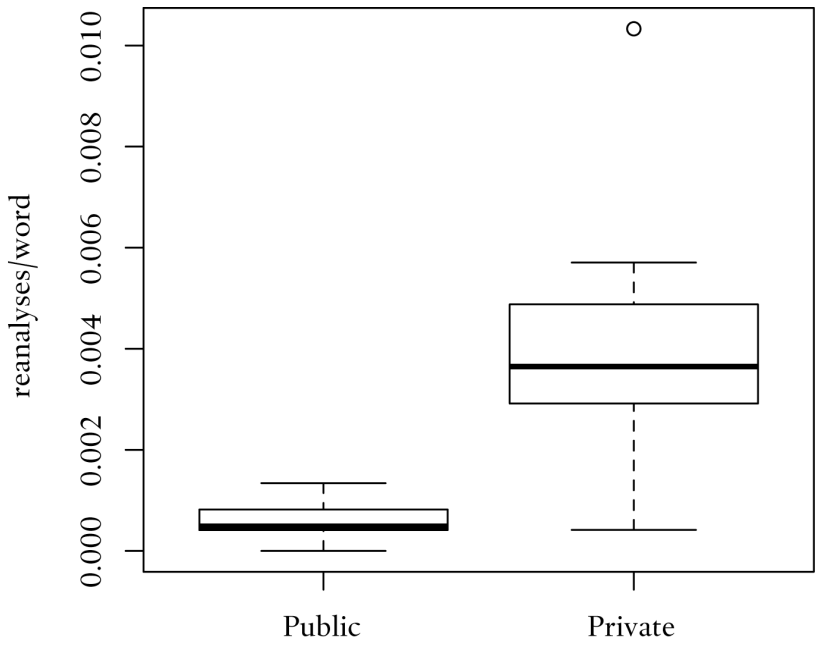
In order to verify the alternative hypothesis, we have to be able to reject the *null hypothesis* (H_0), which states that the two populations have the same mean:

$$H_0: \textit{mean difficulty}_{\text{Attic Public Speeches}} = \textit{mean difficulty}_{\text{Attic Private Speeches}}$$

[87] See Pompei (2006) on conjunct participles.

Table 2: Reanalyses per word

Public texts			
	Reanalyses	Words	Normalized score (reanalyses per word)
Lys. 1	1	2412	0.0004146
Lys. 12	1	2438	0.0004101
D. 22	2	2447	0.0008173
Antipho 1	0	1732	0
D. 9	2	2436	0.0008210
D. 15	3	2238	0.0013404
Hyp. 6	1	2054	0.0004868
Private texts			
	Reanalyses	Words	Normalized score (reanalyses per word)
Pl. *Ap.*	7	2409	0.0029058
Antipho 4	11	1928	0.0057054
Isoc. 6	9	2468	0.0036467
Isoc. 7	10	2469	0.0040502
Th. 2	20	1936	0.0103306
Pl. *Mnx.*	1	2406	0.0004156
Isoc. 9	7	2392	0.0029264



The graph under the table visualizes how the data are *distributed*. This type of graph is called a *boxplot*: the boxes show the ranges within which the central 50% of the data are found. As far as private texts are concerned, for instance, 50% of the texts in the sample score between about 3 reanalyses per 1000 words and about 5 reanalyses per 1000 words. The thicker line in the middle of each box indicates the *median* of each sample: in the 'private' sample, 50% of the texts score less than a little less than 4 reanalyses per 1000 words, and the other half score more than that. The dashed lines (*whiskers*) show the highest and lowest data points whose value is not an *outlier* (an exceptionally high or low value). Outliers are displayed as dots unconnected to the rest of the plot. In this graph, the circle by the top right corner is an outlier, representing the score of Thucydides.

This graph suggests that the scores of the samples are quite different indeed and that public texts are easier than private tests. However, we cannot simply compare the samples: we have to calculate the probability that the samples actually belong to two distinct populations.

A standard way of doing this is by performing a *t*-test, which requires that the samples to be compared are normally distributed; this is the case when the values that are found more often are those close to the sample mean and the frequency decreases symmetrically for higher and lower values. Normality can be tested with the Shapiro-Wilk test, which tells how significantly different a distribution is from a normal distribution. The *p*-values for the Shapiro-Wilk tests performed on the distributions of the private and the public samples are 0.296 and 0.741 respectively, which means that neither distribution differs significantly from normality (*p*-values would have to be lower than 0.05 for the opposite to be true; here, a *p*-value of 0.05 means that the probability of a distribution to be normal would be less than 5%). Another feature of the distributions we need to know before performing a *t*-test is whether their *variance* is homogenous. The variance is a measure which represents how dispersed the data points are within a sample: the higher the value, the more different from one another the data points are. The boxplot already reveals that the data points in the public sample are much closer to one another than those in the

private sample (the former's box is much narrower and the whiskers much shorter). As a matter of fact, an *F*-test of homogeneity of variance shows that the probability (*p*-value) that the two samples have the same variance is 0.0001 (0.01%). This means that we should perform a *t*-test for samples with different variances. The *t*-test must be one-sided, since the alternative hypothesis predicts that the mean score for public texts should be *lower* than, not just different from that of private texts. According to this test, the probability (*p*-value) that the mean difficulty score of the population from which the public sample was drawn is *not lower* than the mean difficulty score of the population from which the private sample was drawn amounts to 0.01 (1%). This score is lower than 5%, which suggests that sufficient evidence exists to reject the null hypothesis and to accept the hypothesis that, on average, Attic 'public' speeches were easier to understand than Attic 'private' speeches.[88]

5.6 Discussion

The most immediate conclusion we can draw from this study is that if a text scores high on the difficulty scale, then it is likely that it was meant for private circulation. In the table below, the texts are ranked according to their difficulty score (per thousand words):

Text	Reanalyses	Words	Score	
Th. 2	20	1936	10.33	Private
Antipho 4	11	1928	5.70	Private
Isoc. 7	10	2469	4.05	Private
Isoc. 6	9	2468	3.65	Private
Isoc. 9	7	2392	2.93	Private
Pl. *Ap.*	7	2409	2.90	Private
D. 15	3	2238	1.34	Public
D. 9	2	2436	0.82	Public
D. 22	2	2447	0.82	Public
Hyp. 6	1	2054	0.49	Public
Pl. *Mnx.*	1	2406	0.41	Private

[88] The whole procedure (with the exception of *t*-testing samples with different variances) is described by Gries (2009): 205–12.

Lys. 1	1	2412	0.41	Public
Lys. 12	1	2438	0.41	Public
Antipho 1	0	1732	0	Public

We might be tempted to set a threshold between public and private texts about the score of D. 15, the highest scoring public text, and claim that texts for which more than two reanalyses per thousand words can be envisaged should be considered difficult. However, we should ask ourselves whether the probability of finding 3 reconstructable reanalyses over 2238 words (as in D. 15) and that of finding 7 over 2409 (as in Pl. *Ap.*) are significantly different from each other. This is not the case: the probability that the proportion of reanalyses in Pl. *Ap.* is the same as that in D. 15 is about 40%. Going up in the ranking, such chances decrease with Isoc. 9 (39.8%), Isoc. 6 (20%), Isoc. 7 (13.6%), and they only reach significance level with Antipho 4 (3.09%). Incidentally, the significance of the differences between a text and another increases with the size of each text.[89] As to the opposite, 'private' texts can score as low as, and lower than, 'public' texts. Nothing suggests that a private text *ought to be difficult*. Writers who were able to, could well include a fully-deliverable speech in their 'private' work. In this respect, the funeral speech from the *Menexenus* is an emblematic example; as we have seen, Cicero reports that it was regularly delivered publicly indeed.

In the end, this type of analysis is more effective (if not *only* effective) as a descriptive method than as a predictive one: we cannot infer much about the intended mode of publication of a text by simply looking at its difficulty, unless it should be extraordinary high. As a *coda* to this experiment, for instance, I surveyed one of Isocrates' logographic speeches, whose 'status' is fairly uncertain, as we have seen. I have chosen oration 17 (*Trapeziticus*), which he (allegedly) wrote for a Bosporan client in the late 390s.[90] Over 2398 words (sections 1–40), I detected only one possible case which would induce reanalysis:

89 All tests of proportion are two-sided, since we need to verify that texts are *different* from one another, and *not* that the one proportion is *a priori* greater or smaller than the other.

90 Trevett (1990).

(96) πᾶσί τε φανερὸν ἀπαιτούμενον καὶ ἑτέροις προσομολογοῦντα ὀφείλειν (Isoc. 17.8)

'It was evident to everyone that I was being asked for money, and that I was admitting to owe some to other people'

Both προσομολογοῦντα and ὀφείλειν can govern a dative, and it is likely that ἑτέροις would be constructed with the earliest verb (*'that I was admitting to others that I was in debt'*) and would have had to be reanalysed syntactically. The normalized difficulty score for this speech falls in line with those of the speeches of Lysias (0.42 reanalyses per thousand words) and looks distant from the scores of the other speeches of Isocrates, even though a test of proportions comparing Isoc. 17 to the lowest scoring among the speeches of Isocrates included in the corpus (Isoc. 9) shows that the scores are different from one another only at a statistically near-significant level (p = 0.0762). The speeches of Antiphon show that an author could well adapt his writing to the speech situation he envisaged, and this might well have been the case with Isocrates. However, we cannot prove this using only an analysis of this kind.

6. *Memoria*

6.1 *Rem tene, verba sequentur*

Public performance in classical Athens most often did without any written text. Poetry and drama would be recited (and sung) from memory, and so would most speeches, particularly political speeches, which should preferably appear to be as extemporaneous as possible. On these grounds, it is tempting to connect the memorability of a text to its intended mode of performance: if public texts were to be learnt by heart, then they should be memory-friendly. It is true that it might not have been impossible for unexperienced defendants to use ὑπομνήματα, and that skilled public speakers would often need to improvise, which would somehow make memorization less pivotal to public performance than one could assume. Still, as we have mentioned, there is evidence for the practice of memorization of prose texts in classical Athens,[1] and later on, possibly no sooner than the second half of the 2nd century BC, *memoria* became one of the formal divisions of rhetoric.[2]

Now, when dealing with memory for texts, a distinction must be drawn between gist and verbatim memorization. One can memorize the structure of a text, consisting of its topics and their exact order (gist), and/or one can memorize the exact wording (verbatim). This distinction (of which several ancient writers were already aware, as we shall see) must be borne in mind to understand what the ancient sources mean when they talk about memorization. Alcidamas, to start with, discusses the custom of verbatim memorization of written speeches, mentioning its difficulty as a deterrent from preparing speeches beforehand altogether.[3] Rehearsal of rote-memorized speeches is also hinted at by Aristophanes as a common practice for

1 Cf. Pl. *Mnx.* 236b 3–4, where Socrates describes Aspasia as rehearsing a speech which was only partially prepared: τὰ μὲν ἐκ τοῦ παραχρῆμά μοι διήει, οἷα δέοι λέγειν, τὰ δὲ πρότερον ἐσκεμμένη.

2 Kennedy (1972): 124.

3 Alcid. *De Sophistis* 18–21.

would-be speakers.[4] The theory of memorization, however, mostly dealt with gist memorization, as was the case with the mnemotechnic method of τόποι, traditionally traced back to Simonides.[5] This is particularly apparent in Roman rhetoric. In particular, Cicero hints at recall of words (*'omnem discriptum verborum apparatum', de Orat.* 2.355) when he lists the benefits of memory. However, further on he admits that memory for words is not so necessary for the orator, as opposed to memory for things (2.359, cf. 3.125, *'rerum enim copia verborum copiam gignit'*). Quintilian remarks that memory not only preserves the order of the arguments, but also that of words (*Inst.* 11.2.8), and he gives some advice for verbatim memorization (11.2.27–8). Further on, however, he remarks how risky it would be for a bad memorizer to learn his speech by heart, unless he should be good at improvising. A good improviser would be able to face the necessity of substituting a word for another without losing his train of thought and can afford speaking after little rehearsal. Bad memorizers who cannot even improvise had better give up public speaking altogether. But *haec rara infelicitas erit* (11.2.48–9, cf. 2.4.27–8). According to Quintilian, improvisation itself after all requires a good (gist) memory, which works as an 'interface' between *inventio* and *elocutio* (11.2.2–3).

Going back to classical Athens, Aristotle (*Rh.* 1404a) compares public speakers to actors and stresses the importance of λέξις. When it comes to written speeches (γραφόμενοι λόγοι), that is, epideictic speeches prepared in writing,[6] λέξις matters more than διάνοια ('thought') in determining their success. Wording, whether improvised or not, seems to have mattered after all. It is also telling that in Plato's *Phaedrus* (228a–30e) the eponymous character apologizes for remembering the διάνοια of Lysias' *Erotikos* instead of having even tried to learn by heart the exact

4 Ar. *Eq.* 346–50.

5 Cf. Hansen (1991): 142. Small (1997) discusses ancient techniques such as τόποι and *imagines* in the light of modern psychology. For a description of such methods see also Blum (1969), and among ancient sources, Arist. *Mem.*, *Ad Herennium* 3.28–40 and Quint. *Inst.* 11.2 in particular. On Simonides see Cicero, *de Orat.* 2.351–4. The sophist Hippias of Elis (5th century) was also famous as a memorizer (Pl. *Hp.Ma.* 285e–6a, *Hp.Mi.* 368d, X. *Smp.* 4.62).

6 Kennedy (1991): 219 n. 10, *contra* Dufour–Wartelle (2003): 100, n. 4 who interpret this as an allusion to the speeches of Isocrates, which were never delivered.

words (παντὸς μᾶλλον τά γε ῥήματα οὐκ ἐξέμαθον). When Socrates realizes that Phaedrus is carrying a written copy of the speech, he declares he would rather hear him read from it than practise from memory (ἐγγυμνάζειν), showing a preference for verbatim over gist reproduction of a written text, at least as long as epideictic speeches were concerned. This episode also reveals that speeches were memorized (in a verbatim way) at leisure for 'private' delivery. This falls in line with the use of model speeches in sophistic education. As Aristotle reports (*SE* 183b 38–9), Gorgias made his students memorize his speeches from written copies. This was part of their practical training and might have helped them build up a repertoire of commonplaces and expressions which could foster their improvisational skills.[7] This type of mnemonic instruction might be alluded to, and made fun of, in Plato's *Menexenus* (236b 7–c 1): Socrates tells about Aspasia teaching him her speech and almost beating him whenever his memory failed.[8]

As a matter of fact, verbatim memorability was not a prerogative of 'public' speeches *scricto sensu*. As we have seen, clarity was highly desirable in 'public' speeches. 'Private' speeches could still be as clear as, or even clearer than, 'public' speeches, but this would not be a requirement. Memorability instead could be desirable for private speeches *as well*. However, there is no real systematic discussion of how to write for memory in the ancient rhetorical treatises: ancient mnemotechnics were mostly concerned with how to learn *any* text by heart; if we are to believe Quintilian (*Inst.* 11.2.8), not even length should be a problem for a skilled memorizer. If we also consider that, from a psycholinguistic point of view, texts that are difficult to understand can be easier to recall, since they are elaborated at length at a deeper level,[9] it is not possible to expect that the 'public' texts, besides being clearer than 'private' texts, should also be easier to memorize.

Nevertheless, memorability can be taken as an indicator of the extent to which a written text might correspond to an orally delivered version. If a pragmatic (forensic or deliberative) speech was composed in writing, the speaker (who might or might

7 Cf. Wilcox (1942): 153, Blum (1969): 52, Marrou (1965): 96–8.

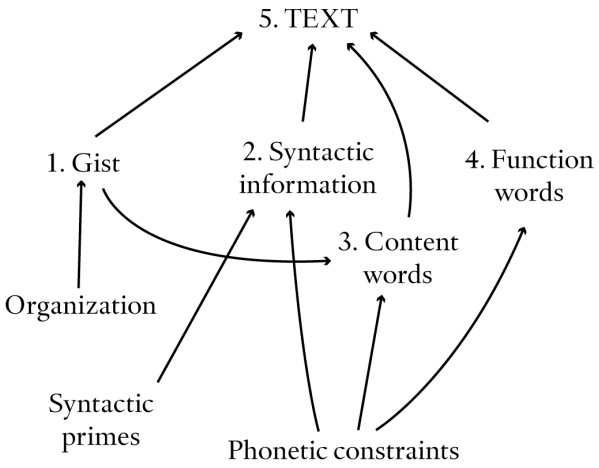
8 Tsitsiridis (1998): 174, Dümmler (1889): 24.

9 Engelkamp-Rummer (2002).

not correspond to the author) would surely have used it as a support for (at least) gist memorization. If the exact wording was easy enough to *memorize* (but not necessarily to *process*), it is likely that the speaker would learn some amount of text verbatim, whether aiming at it or not. Analogously, if the written version of a speech was transcribed after it was delivered, memorable structures are likely to have been preserved.

As we have seen (3.3.8), the likeness of a written speech to its oral counterpart is normally assessed by observing other features of the text, one of which would be its size, as is the case with Demosthenes' *De Falsa Legatione*. We can reconstruct several scenarios that would account for the excessive length of a written speech: (a) an orator might have composed a large amount of preparatory notes and used only the suitable parts while speaking but retaining them all when publishing the speech in writing; (b) an orator might draft his speech, then improvise upon delivery and incorporate the improvised materials in the final, written version; (c) an orator might simply add new materials to the written version alone after delivering the speech. Where (a) or (b) should hold true, the same would apply as we have just argued about any orally delivered speech. A scenario like (c), on the other hand, can be reconstructed in case an orator wished to get the last word by modifying or adding arguments he was not able to produce during the actual debate. Given this premiss, he might like to retain a plausible 'public' diction and conceal his alterations, writing as if he were still to deliver the speech. As I mentioned at 5.1, similar scenarios have been outlined for the *Verschriftlichung* of the two versions of the *Third Philippic* of Demosthenes. If we were able to combine a study of improvisation (and language production) with one on memorability, we might bring in new arguments for the reconstruction of the composition history of texts: the higher the memorability score, the more faithful a text may be to an orally delivered version.

However, operationalizing memorability is very difficult: verbatim memory for prose is determined by several different factors, as the graph at the beginning of the next page shows and I shall describe in the following sections.



6.2 Sound

Ancient sources that hint at what makes a text easy to memorize often mention rhythm. In Plato's *Phaedrus,* Socrates remarks that Evenus of Paros used verse for the sake of memorability (φασὶν ἐν μέτρῳ λέγειν μνήμης χάριν, 267a). The corresponding scholion (*Scholia vetera,* ad loc.) makes it clear that epic verse is easier to remember than prose (τὰ ἔπη τῶν καταλογάδην εὐμνημονευτότερα). Similar remarks are also found in pseudo-Scymnus' geographical poem *Ad Nicomedem regem*, dating to the 1st century BC, where it is stated that the iambic trimeter can be used for the sake of clarity and memorability (μέτρῳ δὲ ταύτην ἐκτιθέναι προείλετο, τῷ κωμικῷ δὲ, τῆς σαφηνίας χάριν, εὐμνημόνευτον ἐσομένην οὕτως ὁρῶν, 33–5). Later on, the same is claimed by Galen (τὰ ἔμμετρα τό τ' εὐμνημόνευτον ἔχει, *De Antidotis libri II* 14.191.2–3 Kühn; αἱ διὰ μέτρων ἐγγεγραμμέναι δυνάμεις φαρμάκων εὐμνημόνευτοί εἰσι, *De compositione medicamentorum per genera libri VII* 13.455.7–9 Kühn).

The effectiveness of rhythm as a mnemonic aid is well established in modern psychological literature.[10] In general, constraints support memorization: the more conditions a linguistic item must fulfil, the easier it is recalled on the grounds of the conditions themselves. This is exactly what rhythmic patterns do, in that they limit the choice of linguistic elements that might fit in a specific position in the utterance. When rhythm is combined with other constraints, such as rhyme or alliteration, and

[10] Rubin (1995): 85–8, Small (1997): 74–6, Devine-Stephens (1993).

rhythmic phrases correspond to syntactic phrases, the memorability of text increases even further.[11] Of course, the advantages of rhythm are much more sizeable when it is organized in regular units, that is, in metrical texts, and especially when rhythmic units correspond to body movements and music.[12]

In the *Rhetoric* (1409b 5–8), Aristotle maintains that metre is more easily remembered than prose since it is measured by 'number', the most memorable of all things (ἀριθμὸν […] ὃ πάντων εὐμνημονευτότατον. διὸ καὶ τὰ μέτρα πάντες μνημονεύουσιν μᾶλλον τῶν χύδην· ἀριθμὸν γὰρ ἔχει ᾧ μετρεῖται). Elsewhere (1408b 21–32), he suggests that prose should be neither metrical (ἔμμετρος) nor without rhythm (ἄρρυθμος). It should be 'delimited', and a suitable limit is provided exactly by 'number'. As far as language is concerned, he explains, 'number' means rhythm. Metres are precise rhythmic segments (τμήματα), and prose rhythm must not be exact, for otherwise a text would be a poem. Prose also has 'number' when it consists of 'periods' (1409a 34–b 5). Precisely because they are delimited by 'number', 'periods' are easier to remember. Now, Aristotle's definition of 'period' (λέγω δὲ περίοδον λέξιν ἔχουσαν ἀρχὴν καὶ τελευτὴν αὐτὴν καθ' αὑτὴν καὶ μέγεθος εὐσύνοπτον, 1409a 35–b 1) is not terribly helpful,[13] and it has been widely debated whether a 'period' is primarily defined as consisting of 'logical' (syntactic) units or rhythmic units. As a matter of fact, syntactic and rhythmic completeness cannot be separated in Aristotle's explanation of what a 'period' and its constituents, the 'cola', should be like. Each rhythmic unit must correspond to a syntactic unit (δεῖ δὲ τὴν περίοδον καὶ τῇ διανοίᾳ τετελειῶσθαι, 1409b 8–9): as it were, enjambement is not admitted. Rhythm is not *per se* sufficient to identify a 'period'. Ideally, if all prose ought to have rhythm, then rhythm itself should be a constant. What is variable is the adherence of the structure of thought (as expressed by syntax) to the rhythmic patterns: only when the two correspond can a 'period' be identified.[14] The logical-syntactic

11 Rubin (1995): 101–8. On these phonetic effects see below.

12 Rubin (1995): 108–14.

13 Cf. Fleming (2006): 96–7.

14 Cf. Fowler (1982): 92, Adamik (1984): 192.

criterion is not sufficient either, but it is decisive.[15]

When Aristotle maintains that 'periods' are easy to remember, he is assuming the point of view of the audience.[16] He is not interested in whether they can be easily memorized by the speaker himself. This is also explicit in the *Rhetorica ad Alexandrum*: one must be concise in order that "*they* remember what has been said" (συντόμως δέ, ἵνα μνημονεύσωσι τὰ ῥηθέντα, 30.5). Let us assume, for the sake of the argument, that what is designed to be remembered by the audience is also easily remembered by the speaker and that 'periods' are an indicator of the memorability of a text altogether. First of all, we should assess the plausibility of Aristotle's remark from a psycholinguistic point of view. As we mentioned above, the effectiveness of rhythm as a mnemonic aid increases along with its regularity. Rhythm itself is a natural feature of language. Its regularization gives birth to metre, which, being highly constrained, is easy to memorize. For this reason, it will be useful to assess how regular the rhythm of a 'period' would be. Aristotle provides some examples of what he means by 'period' (*Rh.* 1409b 34–10a 20), mostly quoted (more or less accurately) from Isocrates' *Panegyricus*.[17] Adamik analyses the rhythm of the first quotation as follows (*Rh.* 1409b 34–6 = Isoc. *Panegyricus* 1):

> πολλάκις ἐθαύμασα τῶν τὰς πανηγύρεις συναγαγόντων
> καὶ τοὺς γυμνικοὺς ἀγῶνας καταστησάντων
>
> "The kola are of a paean character, which is hardly observable because the paeans are resolved in cretic and baccheic. The beginnings and ends of the kola are rhythmically slowing down, they are weightier than the middle parts. The second kolon consists of fewer syllables (13) than the first one (17), still it has an isocolonic effect, because it contains more long syllables than the first one. The grammatical structure of the two kola is entirely parallel. Both depend on the verb ἐθαύμασα of the first kolon, and both are composed of a participle in plural genitive and of a complement thereof in plural accusative. The end of the kola form a homoioptoton, the function of which is apparently to underline the

15 Cf. Innes (1994): 37–8. See also Oberhelman (2003): 29.

16 Murphy (2002): 221–2.

17 See Kennedy (1991): 240 for a complete list.

> parallelism and to close the kola with stress. The rhythm as well as the grammatical meaning of the sentence is completed: each kolon is a unit of rhythm and thought."[18]

Now, assessing the rhythm of prose is not an unproblematic task. In the first place, it is much more sensitive to textual problems than other types of linguistic analysis.[19] In the passage at hand, for instance, Adamik counts 17 syllables in the first *colon* since he reads συναγόντων (presumably after Par. 1741) for συναγαγόντων (as other modern editors print following Vettori). Given the inaccuracy of other quotations, Adamik is probably right, and all in all his analysis is vague enough not to be as affected as a more ambitious one would be. As is evident, he mostly deals with other features than rhythm. The idea of an 'isocolonic effect' is also problematic. One could base one's claim on the total count of *morae*, or one could argue that a speaker would be able to modulate the rhythm of his speech by altering its tempo or adding pauses. In general, it would be hard to assume a strict isosyllabic or isochronic principle for the prosody of prose, for isosyllabism would not be easily perceived by the listeners, and as we have just remarked, isochrony would be most likely manipulated by a speaker.[20]

As a principle, it is not possible to infer for classical Greek prose the same usage of prose rhythm as is theorized in the Latin tradition.[21] Many fragments of early Ionian prose are metrical rather than rhythmical, mostly showing dactylic and anapaestic sequences,[22] which Aristotle would object to (*Rh.* 1408b 32–09 a 8). In the same passage, Aristotle mentions Thrasymachus as the earliest user of the paean (or paeon), a sequence of four syllables of which only one is long. Paeans come in an

18 Adamik (1984): 189–90.

19 In general, evaluating prose rhythm is problematic, owing both to methodological issues (especially as regards the scansion of ambiguous syllables) and textual transmission, see Blass (1901): 30–42, 59, Dover (1997): 160–1, 165, De Groot (1919): 150–5, De Groot (1915). Such problems also affect a relatively recent computer-based analysis like McCabe (1981), cf. Usher (2010): 92, n. 21.

20 Usher (2010): 84.

21 Usher (2010): 94. Latin sources for the theory of prose rhythm are surveyed and discussed in Oberhelman (2003).

22 Lilja (1968), Dover (1997): 160–5.

'opening' form (with the long syllable first: –⏑⏑⏑) and in a 'closing' form (ending with the long syllable: ⏑⏑⏑–). These paeans, according to Aristotle, were the hallmark of 'modern' rhythmic prose (νῦν μὲν οὖν χρῶνται τῷ ἐνὶ παιᾶνι, 1409a 10) and the only acceptable type of rhythm, precisely because of their being 'unmetrical', as opposed to dactyls or iambs (ἀπὸ μόνου γὰρ οὐκ ἔστι μέτρον τῶν ῥηθέντων ῥυθμῶν, ὥστε μάλιστα λανθάνειν, 1409a 8–9). Thrasymachus' invention[23] was most probably derived from practice and not immediately turned into a systematic theory (παιάν, ᾧ ἐχρῶντο μὲν ἀπὸ Θρασυμάχου ἀρξάμενοι, οὐκ εἶχον δὲ λέγειν τίς ἦν, 1409a 2–3).[24] As Usher remarks, many Greek words or short phrases scan as five-*mora* feet, which correspond to resolved paeans, and this might have fostered Thrasymachus' unconscious invention. He also adds that Dionysius of Halicarnassus' rhythmical analyses (such as those in *De Compositione Verborum* 18) reveal that a Greek listener would tend to scan prose assuming words or short phrases as feet.[25] It might be questionable whether this can automatically be inferred for audiences of three centuries earlier or with less competence than Dionysius. In general, examining the rhythm of prose texts does not seem to have been Dionysius' cup of tea. To start with, he confesses his reluctance to tackle the topic (οὐ γὰρ δὴ τὴν ἄλλως γέ μοι προὔκειτο μετρικῶν καὶ ῥυθμικῶν ἅπτεσθαι θεωρημάτων, ἀλλὰ τοῦ ἀναγκαίου ἕνεκα, *Comp.* 18.1). Further on, he admits that alternative scansions are sometimes possible. This is the case with an example from the funeral speech from the *Menexenus* (Pl. *Mnx.* 236d 4–5). Dionysius analyses the sequence σφίσιν αὐτοῖς as a hypobacchius (⏑––, σφῐσῑ̄ν ᾱ̆ῡ̆-) or an anapaest (⏑⏑–, σφῐσῐ̆ν ᾱ̆ῡ̆-; ὑποβάκχειος, εἰ δὲ βούλεταί τις, ἀνάπαιστος, *Comp.* 18.11) followed by the κατάληξις (-τοῖς). This means that he allows for the possibility for a short vowel followed by a resonant (-ιν) to constitute a long syllable, as he also does elsewhere.[26] Let us turn to his examples

23 Actually, rhythmic analysis of a long fragment of Thrasymachus (DK 85 B 1 = D.H. *Dem.* 3–4) does not show any preferential use of paeans, Dover (1997): 173.

24 Cf. Dufour–Wartelle (2003): 110, n. 8.

25 Usher (2010): 85.

26 Aujac-Lebel (1981): 213, n. 1, 131, n. 1. Dover (1997): 180 dismisses these as 'puerile errors', while Usher (2010): 87 argues that "flexibility may be a distinguishing feature of prose rhythm".

from the opening of Demosthenes' *De Corona.* Dionysius scans the *colon* ὅσην εὔνοιαν ἔχων ἐγὼ διατελῶ τῇ τε πόλει καὶ πᾶσιν ὑμῖν as a hypobacchius (⏑––, ὅσην εὔ-) followed by either a bacchius or a dactyl (–⏒⏑, -νοιαν ἔ-; εἶτα βακχεῖος, εἰ δὲ βούλεταί τις, δάκτυλος *Comp.* 18.18), a cretic (–⏑–, -χων ἐγὼ), two paeans (⏑⏑⏑–|–⏑⏑⏒, διατελῶ τῇ τε πόλει), then either a molossus or a bacchius, since "either scansion is possible" (––⏒, καὶ πᾶσιν; μολοττὸς ἢ βακχεῖος, ἐγχωρεῖ γὰρ ἑκατέρως αὐτὸν διαιρεῖν), and finally, a spondee (––, ὑμῖν). It is telling that he does not consider short a diphthong preceding a vowel (as in εὔνοῑαν) but, once again, he admits the possibility for a short vowel to build up a long syllable if followed by a resonant (εὔνοιᾱν, πᾶσῑν). Analogously, he scans the subsequent *colon* (τοσαύτην ὑπάρξαι μοι παρ' ὑμῶν εἰς τουτονὶ τὸν ἀγῶνα) as consisting of two hypobacchiuses (⏑––|⏑––, τοσαύτην ὑπάρξαι) followed by a cretic (–⏑–, μοι παρ' ὑ-), a spondee (––, -μῶν εἰς) and either a bacchius or a cretic (–⏓⏒, τουτονὶ; εἶτ' αὖθις βακχεῖος ἢ κρητικός, *Comp.* 18.19). The final ι in τουτονὶ should be long, which would indeed yield a cretic (τοῡτŏνῑ), but Dionysius would rather consider it short, with the second syllable (vowel plus resonant) being long, which would result in a bacchius (τοῡτōνῐ̆). This system, of course, is pretty idiosyncratic, and it is not even consistent. Interestingly enough, Dionysius reanalyses the same passage a few chapters ahead (*Comp.* 27–8) but does so in a slightly different way.[27] This time, he claims that the *colon* ὅσην εὔνοιαν ἔχων ἐγὼ διατελῶ might be turned into a genuine iambic trimeter by the addition of clitic γε to the personal pronoun ἐγώ, and that Demosthenes avoided this on purpose, in order that the metre might remain hidden (ἰαμβεῖόν ἐστιν ὀρθόν, συλλαβῆ τοῦ τελείου δέον, ἵνα δὴ κἀνταῦθα ἄσημον γένηται τὸ μέτρον, ἐπεὶ μιᾶς γε συλλαβῆς προστεθείσης τέλειον ἔσται). Such a statement presupposes a scansion that rules out the possibility for the final syllable in εὔνοιαν to be measured as long, namely (footwise): ⏑– –– (ὅσην εὔνοι-) ⏑⏑– ⏑– (-αν ἔχων ἔγω-) ⏑⏑⏑ ⏑– (-γε διατελῶ). Analogously, he seems to change his mind when he reanalyses the *colon* that follows. Incidentally, this time he assigns the last phrase of the *colon* discussed at 18.18 (τῇ τε πόλει καὶ πᾶσιν ὑμῖν) to

[27] De Jonge (2008): 342–7 argues that such differences are due to the different purposes of the passages in which these metrical analyses appear.

the *colon* discussed at 18.19 (τοσαύτην ὑπάρξαί μοι παρ' ὑμῶν εἰς τουτονὶ τὸν ἀγῶνα), but he also omits the clitic conjunction τε, which shows that the vulnerability of prose rhythm studies by textual issues does not only affect modern scholarship. At any rate, he considers the newly assembled *colon* an example of a paeanic or cretic sequence (κἄπειτα ὁ παιὰν ἢ ὁ κρητικὸς ἐκεῖνος ὁ πεντάχρονος ἥξει ῥυθμὸς ἐν τοῖς ἑξῆς τούτοις), comparing it to a passage from Bacchylides. According to Aujac and Lebel, Dionysius might have the following scansion in mind:

–⏑–– –⏑– –⏑–
τῇ πόλει καὶ πᾶσιν ὑμῖν τοσαύ-
–⏑–– –⏑– ––
την ὑπάρξαί μοι παρ' ὑμῶν εἰς
–⏑– ⏑⏑– ⏑
τουτονὶ τὸν ἀγῶνα

This can be interpreted as a mixture of cretics and epitrites, with a spondee and a paean (or an anapaest followed by final κατάληξις). If this is correct, then Dionysius would give up on his 'diphthongal' vowel plus resonant groups and measure both -ιν in πᾶσιν and -ον in τοῦτον as short syllables.[28]

Going back to the scansion of the speech from the *Menexenus*, Dionysius confesses that assigning syllables to one foot rather than another is ultimately arbitrary and depends on personal taste: one could analyse, he says (18.11), a sequence like ἔργῳ μὲν ἡμῖν as starting with a iambus (––⏑–, ἔργῳ μὲν ἡ-), but he would be more inclined to make it start with a bacchius (––⏑) and consider ἡ- as the initial syllable of the following foot on purely 'stylistic' grounds (βακχεῖος μὲν ὁ πρῶτος· οὐ γὰρ δή γε ὡς ἰαμβικὸν ἀξιώσαιμ' ἄν ἔγωγε τὸ κῶλον τουτὶ ῥυθμίζειν ἐνθυμούμενος ὅτι οὐκ ἐπιτροχάλους καὶ ταχεῖς ἀλλ' ἀναβεβλημένους καὶ βραδεῖς τοῖς οἰκτιζομένοις προσῆκεν ἀποδίδοσθαι τοὺς χρόνους). To sum up, such analyses do not seem compatible with the idea of some sophisticated theory and practice of prose rhythm, which we might expect Dionysius to be acquainted with.[29] Dionysius surely knows some metrical

28 Aujac-Lebel (1981): 214, nn. 2 and 3, 222–3, nn. 1–4.

29 So Usher (2010): 94. For a recent overview of Greek prose rhythm theory between Aristotle and Dionysius see Oberhelman (2003): 29–33.

theory, but after all his scansions of prose do not seem much more helpful or insightful than those attempted by modern scholars. In chapter 25 of *De Compositione Verborum* he comments on a good wealth of 'poetic' passages in prose (λέξις ἄμετρος ὁμοία καλῷ ποιήματι ἢ μέλει), and he detects things such as anapaestic tetrameters lacking one foot, would-be pentameters and all sorts of approximations to lyric and recitative metres. This analysis is not much different, for instance, from that at Dover (1997): 165–8; possibly, it is just less methodologically sound. As it seems, Dionysius' keenness on detecting rhythmical sequences in prose writers of the past is mostly related to a 'bookish' appreciation of literature. In particular, we can subscribe to Usher's view that Dionysius' searching for rhythms in Demosthenes can be explained by his admiration for him: if Demosthenes was the best orator, he must have been the best at prose rhythm as well. However, according to Usher, no other sources make reference to any pronounced 'rhythmicity' of Demosthenes' speeches.[30] Isocrates, instead, explicitly declares to have made use of rhythms in his own works and to be able to teach how to use them.[31] Usher attempted a rhythmical analysis of some passages (*Helenae encomium* 16–17, 23–4, 26–7; *Busiris* 10, 12–13; *Panegyricus* [*passim*]; *Panathenaicus* 74–90; *Antidosis*, *De Pace*, and *Areopagiticus* are also taken into account), only sparsely finding sequences to which a discernible effect might be ascribed. Such effects are mostly related to the prosodic pace of the text, as conditioned by sizeable sequences of either long or short syllables, rather than by the presence of specific poetic metres. The same idea emerges from the recommendations on rhythms put forward by Demetrius, who hardly ever gives explicit metrical descriptions (apart from those of paeans, *Eloc.* 38–9). For instance, he describes a 'colon' as a παιωνικόν but not ἐκ παιώνων ἀκριβῶς (*Eloc.* 41), he disapproves of spondaic sequences in prose (*Eloc.* 42) and talks about full metres and half-metres. These should be disguised and make the composition

30 Usher (2010): 91–3.

31 *Philippus* 27, *In Sophistas* 16. At *Evagoras* 8–11, Isocrates mentions, among the difficulties incurred by someone wishing to praise a man in prose, the impossibility to charm the listeners with rhythm and symmetry, as poets do (ταῖς εὐρυθμίαις καὶ ταῖς συμμετρίαις ψυχαγωγοῦσι τοὺς ἀκούοντας). It is true that 'pragmatic' orators might not want to deploy such effects, but this sounds more like a 'rhetorical' statement in an epideictic context.

neither ἔμμετρος nor ἄμετρος, but possibly μετροειδής. Demetrius provides examples of 'elegant and harmonious' *cola* (γλαφυρόν καὶ ᾠδικόν), of 'graceful composition' (χαριέντως ἁρμόζειν) or of 'effeminate and ignoble rhythms' (κεκλασμένα καὶ ἄσεμνα μέτρα), and so forth (180–5, 189). Metrical analysis of such examples reveals more or less the same structures as Usher identified in Isocrates; it is hardly possible to recognize feet and standard poetic metres.[32]

Usher concludes that "Isocratean eurhythmia [is] used in a limited number of contexts even in the discourses that are most suited to it".[33] As we have seen, Aristotle finds fault with ἔμμετρος prose, and so do Demetrius and Dionysius. The latter commends εὔρυθμος and εὔμετρος prose and regards ἔμμετρος and importantly, even ἔρρυθμος prose as unbecoming (*Comp.* 25.10, cf. *Dem.* 50.7). If Usher's interpretation of Isocrates' *eurhythmia* is correct, then it merely consists of the marked morphing of rhythm in a way appropriate to the contents and the syntax of the sentence. There is also a *negative* side of *eurhythmia*. As we have seen, both Aristotle and Dionysius deem certain metres inappropriate to good prose (*Rh.* 1408b 32–09a 1, *Comp.* 18.20). If human speech has rhythm anyway, one should beware of patterns that sound bad or out of place and deliberately avoid them when they should come up in written composition or improvisation.[34] This interpretation is not too different from what Classe remarked in 1939 about contemporary English prose:

> "In the same way as the modern poet has come to think that the old metrical system is no longer suitable for the expression of contemporary thought, the modern prose-writer […] no longer relies on the powerful syllabic rhythm of the poetical books of the Bible or the writings of Sir Thomas Browne. […] When the nature of the subject is such that the

32 Chiron (1993): 119–20.

33 Usher (2010): 91.

34 Cf. D.H. *Comp.* 25.20 (transl. W. R. Roberts): "Is not a beautiful cadence inevitable in a passage which contains neither a pyrrhic, nor an iamb, nor an amphibrachys, nor a single choree or trochee? Still, I do not affirm that none of those writers ever uses the more ignoble rhythms also. They do use them, and have only introduced them at intervals, interweaving the inferior with the superior".

> rhythmic element of prose is not of paramount importance, or, rather, has only a negative importance; when it is only necessary that the reader should not be hindered by jerkiness or lack of balance in the sentence (as in a continuous narrative), then, what might be called the positive elements of rhythm seem to disappear."[35]

In other words, contemporary English prose is not normally ἔμμετρος, but in order for it to be εὔρυθμος, it had better have a less marked rhythm than an awkward one.[36] However defined, this type of rhythmicity is quite far from the regularity and predictability of metre, which make it easy to remember. We can certainly appreciate that a syntactically and semantically complete *colon* with an appropriate rhythmic pattern could be significantly more memorable than less felicitous prose, as Aristotle asserts. Unfortunately, too much arbitrariness would be involved and a 'native ear' be necessary[37] to turn this into the object of a rigorous quantitative study.

As we mentioned above, other phonetic features such as rhyme and alliteration can work effectively as mnemonic devices. This is due to the fact that when a sound occurs more than once, the first occurrence cues the subsequent ones. This effect is much more prominent at word beginnings and endings, particularly when such repetitions occur in specific prosodic locations, as is the case with rhyme, or in immediately consecutive words, which is the normal domain of alliteration.

In general, alliteration is more powerful than rhyme.[38] The extent to which alliteration is to be expected in Attic prose has been a controversial issue. Examples of alliteration are not hard to find in the early Ionic prose writers (e.g. ὁ Πελίας τῷ Ποσειδῶνι, καὶ προεῖπε πᾶσι παρεῖναι, Pherecyd. [*FGrHist* 3] fr. 105 Jacoby). Denniston detects some in tragedy (most remarkably, τυφλὸς τά τ' ὦτα τόν τε νοῦν τά τ' ὄμματ' εἶ, S. *OT* 371), Plato, and Thucydides, but hardly any in Herodotus and Xenophon.[39] As Polheim remarks, alliteration was not considered a figure of speech, and it is hard to assess its intentionality. It is likely that alliteration was casual when

35 Classe (1939): 134.
36 Cf. also Harding, D. W. (1976): 132–3.
37 Cf. Oberhelman (2003): 27–9.
38 Rubin (1995): 73–5, Alloway (2007).
39 Denniston (1952): 126–9.

involving distant words and words that were not grammatically linked to one another. In such cases, Polheim argues, it would hardly be perceived.[40] As a matter of fact, idiomatic phrases, which are learnt by heart as such by definition, are more often alliterating in languages with less variable word order, which would guarantee that they would always be coherent in the linear order of the sentence.[41] It seems sensible to restrict the scope of alliteration to closely connected sequences of words belonging to the same syntactic (that is, prosodic) unit,[42] no matter what its level is.

Rhyme is an effective cue to verbatim recall but is not very helpful as far as gist recall is concerned.[43] It is difficult to tell whether we can talk about rhyme in Classical Greek at all, if rhyme is defined as the equality of the phonetic sequences starting with the stressed syllables across different words. It is not a trivial question whether the position of the (pitch) accent would be relevant for a native speaker of Classical Greek to perceive words as rhyming or whether the rhythmic structure of the words should matter more. As a general principle, the nature and acceptability of rhymes varies across languages, according to the prosodic and information structure intrinsic to each language.[44] Now, the Greek rhetoricians describe phonetic effects involving word endings, but they do not talk about rhyme as defined above. Aristotle (*Rh.* 1410a 25–10b 2) talks about παρομοίωσις, which can occur either at the beginning or a the end of a *colon*. At the beginning, it consists of using assonant words (such as ἀγρόν ~ ἀργόν and δωρητοί ~ παράρρητοι) in contiguous *cola*. At the end, it consists of (1) the repetition of the same syllables or the same word, or of (2) the repetition of the same grammatical form. In the former case, the figure shall be called a *homoeoteleuton*, whereas in the latter it will be a *homoeoptoton*. According to the *Rhetorica ad Alexandrum* (28), παρομοίωσις only applies to the end of *cola*; that is, it is roughly the same thing as *homoeoteleuton*. Once again, it is exemplified by means of 'near rhymes', as opposed to 'true rhymes' (μίμημα ~ τέχνασμα, ἐνδεῶς ~

40 Polheim (1963): 145. Cf. the remarks on the 'Greek ear' at Denniston (1952): 124.

41 Boers-Lindstromberg (2005): 234.

42 The 'locality' of alliteration is a universal constraint, see Fabb (1999).

43 Rubin (1995): 84.

44 Wagner-McCurdy (2010).

ἐντεῶς). Παρομοίωσις is conditional on παρίσωσις—that is, it should occur in *cola* of equal size. These figures of speech, which are all numbered among the 'Gorgianic figures' (Γοργίεια σχήματα), are ultimately related to one another. As Polheim observes, in Greek literary prose (*colon*-final) *homoeoteleuton* has a strong tendency to imply *homoeoptoton,* and the arrangement of words with the same syntactic function in the same position in the *cola* is primarily sought for structural, rather than aesthetic, reasons. The purpose of introducing phonetic similarities is to highlight the logical partitioning of the text, and figures of sound that do not serve it are generally avoided.[45] According to Polheim, such figures of sound never really disappear from Attic prose, even when the Gorgianic style went out of fashion: in a way, they are intrinsic to the way information is structured in Greek.[46] We might therefore expect to find *homoeoteleuta* in all sorts of texts, especially in parallel structures. Syntactic parallelism itself helps recall, regardless of the phonological features of the parallel structures. Syntactic structures can be primed: once the gist is recalled, the correct verbatim wording can be reconstructed on the grounds of preceding parallel structures.[47]

Operationalizing such features is methodologically problematic. Quantifying rhyme (*homoeoteleuton*) involves serious difficulties. First of all, it would be entirely arbitrary to decide how many phonemes one should take into account, starting from the end of each word, in order to claim that two words end in the same way. Secondly, the extent of this 'sameness' can also be questioned. One might wonder whether homorganic or otherwise similar phonemes should or should not be regarded as the 'same' for the purpose of (at least partial) rhyming; this problem would arise with vowels of different lengths, for instance. Thirdly, even with these issues having been settled, it would not be meaningful to simply count all the words that finish in the same way, regardless of their position in the sentence and relative to one another, and of their syntactic function and lexical category. It would be more sensible to take into account the prosodic position of the words and whether they

45 Polheim (1963): 136–7.

46 Polheim (1963): 154–7.

47 Potter-Lombardi (1998).

belong to syntactically parallel structures or not. If syntactic parallelism should be brought in as a necessary condition, it would follow that *homoeoteleuta* will be considered mnemonically advantageous only if syntactically primed. Syntactic priming *per se* supports memorization, but once again, it is hard to identify and quantify in a rigorous way. For instance, we could identify the following patterns as potential triggers for syntactic and phonetic priming (all examples from Lys. 1, 1–4):

a. Words in the same prosodic position and belonging to the same word class:

   ὅστις οὐκ ἐπὶ τοῖς γεγενημένοις ἀγαναχτοίη, ἀλλὰ πάντες ἂν περὶ τῶν τὰ τοιαῦτα ἐπιτηδευόντων τὰς ζημίας μικρὰς ἡγοῖσθε

   Here, a threshold problem appears: what if the prime and the primed words shared one or more grammatical features in addition to their syntactic function? For instance, would the score for verbs which share their tense, their mood, and/or their person have to be higher than that for those which only meet the 'basic' condition stated at a)?

b. Correlations and oppositions of any kind:

   τοιοῦτος – οἷος, ὁ αὐτός – ὅς περ, οὐ μόνον – ἀλλὰ καί, μέν – δέ, ἅπαντες – οὐδεῖς, and so on.

   With these patterns, difficulties are related to the scope of the relations they establish, that is, to the hierarchical position of the members they correlate (constituents, clauses, sentences, paragraphs, etc.). It would also be arbitrary to set thresholds as to how distant these words can be from one another and as to whether the structures they introduce or to which they belong must be *entirely* parallel, with an exact word-to-word correspondence between them.

c. Phonetically similar words belonging to the same class:

   καὶ ἐν δημοκρατίᾳ καὶ ὀλιγαρχίᾳ

   This would count as a case of *homoeoteleuton.* Similar cases involve words which do not share the same syntactic function and prosodic position:

   ὥστε τὸν χείριστον τῶν αὐτῶν τυγχάνειν τῷ βελτίστῳ

   Would the latter structure have the same or less weight than the former?

d. Shared lexical features *might* (?) also trigger priming:

ὡς ἐμοίχευεν Ἐρατοσθένης τὴν γυναῖκα τὴν ἐμὴν καὶ ἐκείνην τε διέφθειρε καὶ τοὺς παῖδας τοὺς ἐμοὺς ᾔσχυνε καὶ ἐμὲ αὐτὸν ὕβρισεν εἰς τὴν οἰκίαν τὴν ἐμὴν εἰσιών, καὶ οὔτε ἔχθρα ἐμοὶ καὶ ἐκείνῳ οὐδεμία ἦν πλὴν ταύτης

It can also be claimed that, in this passage, ἐμοὶ primes ἐκείνῳ (as the result of pragmatic contrast and *homoeoptoton*).

e. A prepositional phrase *should* prime a subsequent (contrastive) phrase introduced by the same preposition:

εὖ γὰρ οἶδ' ὅτι, εἰ τὴν αὐτὴν γνώμην περὶ τῶν ἄλλων ἔχοιτε, ἥνπερ περὶ ὑμῶν αὐτῶν, οὐκ ἂν εἴη

One could argue that the effect would be the same with prepositional phrases introduced by different prepositions but occurring in (quasi-)parallel syntactic environments:

ὅστις οὐκ ἐπὶ τοῖς γεγενημένοις ἀγανακτοίη, ἀλλὰ πάντες ἂν περὶ τῶν τὰ τοιαῦτα ἐπιτηδευόντων τὰς ζημίας μικρὰς ἡγοῖσθε

How strong must the semantic and pragmatic connection between such phrases be in order to make the case for a mnemonically advantageous priming effect? Once again, it appears that setting thresholds would be entirely arbitrary.

In general, the scope for arbitrariness and uncertainty seems too broad for a strictly quantitative study to be based on analyses of this kind; these would instead be appropriate for a descriptive and qualitative study. It does not seem safe to make predictions about the mnemonic effect of certain linguistic structures when such structures are to be defined by setting too many arbitrary thresholds, and moreover, such definitions are conditional on one another. Should experimental studies on native speakers (which would be impossible to perform for a dead language) reveal a mnemonic advantage which cannot be justified otherwise, then priming could be brought in as an explanation.

Alliteration is more suitable for quantification instead. Alliterative sequences can be defined as sequences of consonants repeating within one word or more immediately contiguous words, and belonging to the same broadly defined prosodic unit (that is,

without any prosodic boundary intervening between them).[48] Phonetic postpositives, which can never start a prosodic unit and need to be preceded by an orthotonic word, should be considered part of the word they follow as if they were suffixes. Likewise, phonetic prepositives should be considered part of the word they precede, as if they were prefixes.[49]

The alliteration score for each sequence would correspond to the number of consonants that repeat with such conditions being respected. The first occurrence of a consonant in the sequence should not be counted. Otherwise, every single non-alliterating consonant would end up being added to the count as well. Geminate consonants should be counted as simple consonants, and double consonants separated into their phonetic components: <ξ> = [k]+[s], <ψ> = [p]+[s] and <ζ> = [z] +[d].[50] Velar nasals [ŋ]—the initial <γ> in γγ, γκ, and γχ—can be regarded as alliterating with dental nasals [n] <ν>. Aspirate plosives [p^h t^h k^h] <φ ϑ χ> can be regarded as alliterating with voiceless plosives [p t k] <π τ κ>.[51]

Let us examine a sequence like περὶ πολλοῦ ἂν ποιησαίμην, for instance. Prepositive περί counts as one word together with πολλοῦ, and so does postpositive ἄν. The phoneme /p/ repeats three times, and its alliteration score would be 2. Likewise, /n/ repeats twice, and its score is 1. The first sentence of Lys. 1 shows the following alliteration pattern (the relevant consonants are underlined):

> περὶ πολλοῦ ἂν ποιησαίμην, ὦ ἄνδρες, τὸ τοιούτους ὑμᾶς ἐμοὶ δικαστὰς περὶ τούτου τοῦ πράγματος γενέσθαι, οἵοίπερ ἂν ὑμῖν αὐτοῖς εἴητε τοιαῦτα πεπονθότες

This definition of alliteration is pretty broad. As a rhetorical device, alliteration is most often described as the repetition of consonantal sounds at word beginnings. However, consonant repetition is not only perceived in such phonetic environments,

48 Rough breathings should also be taken into account as consonants.

49 Cf. Dover (1960): 12–14.

50 Since the phone [z] is exclusively represented as part of the cluster represented by <ζ>, and cannot alliterate with any other consonant, it is irrelevant whether the Attic pronunciation of <ζ> was [zd] or [dz], on which see Allen (1987): 56–9.

51 Cassio (2008a): 34–5.

as we shall shortly see. Moreover, this definition is sensitive to the application of the criteria according to which pre- and postpositive words should be merged with adjacent orthotonics for the purpose of this study. Let us examine the alliterating line from *Oedipus Rex* mentioned above:

τυφλὸς τά τ' ὦτα τόν τε νοῦν τά τ' ὄμματ'εἶ (S. *OT* 371)

Were the strict definition applied, only /t/ in the first occurrence of τά would count as an alliterating consonant, since it would follow the /t/ in τυφλός. The subsequent [t] in τ(ε) would not be counted, since it is part of a postpositive and would be considered internal to the phonetic word it would constitute together with τά. The same applies to τε and the second occurrence of elided τ(ε), with the /t/ phonemes in τόν and the second occurrence of τά also being excluded, due to the fact that they would be the first alliterating consonant in their respective sequences (ὦτα interrupts that starting with τυφλός, and νοῦν interrupts that potentially starting with τόν). Following the broad definition, all repetitions /t/ would be involved in alliterating sequences, which would amount to two:

[τυφλὸς τά τ'ὦτα τόν τε]$_1$ νοῦν [τά τ'ὄμματ']$_2$ εἶ

In general, this definition of alliteration allows accounting at least partially (as far as consonantal sounds are concerned) for phonetic similarity in restricted prosodic domains.

6.3 Size and coherence

The *Rhetorica ad Alexandrum* (30.4–5) recommends that a speech should be concise (σύντομος) in order for the listeners to remember what was said (ἵνα μνημονεύσωσι τὰ ῥηθέντα). If necessary, concise repetition can help (ἂν μὲν μακρὸν ᾖ τὸ μέρος καὶ βουλώμεθα μνημονεύεσθαι, συντόμως παλιλλογήσομεν, 32.6). Quite intuitively, brevity is often connected to effective memorization in the ancient sources (D. [sp.] *In Dionysodorum* 45.2, *Scholia in Il.* 17.32c, Ath.Mech. *De Machinis* 5.11, Aristid. πρὸς Πλάτωνα περὶ ῥητορικῆς 110.26, Gal. *De sanitate tuenda libri VI* 6.419.11 Kühn).

Presenting topics summarily (κεφαλαιωδῶς) is said to help memory (D.S. 17.1.2, Plu. *Coniugalia praecepta* 138c 6: κεφάλαια συντάξας ἔν τισιν ὁμοιότησι βραχείαις, ὡς εὐμνημόνευτα μᾶλλον εἴη, Gal. *De usu partium* 3.106.16 Kühn: διὰ βραχέων αὖθις ἐν κεφαλαίοις ἐπελθεῖν ἄμεινον, *De animi cuiuslibet peccatorum dignotione et curatione* 5.78.3–5 Kühn: νυνὶ δὲ τὰ κεφάλαια μόνα τῶν ἁμαρτημάτων εἴπω, ἃ καὶ βέλτιον εἶναι νομίζω πάλιν ἀναλαβεῖν ἕνεκα τοῦ σύνοψίν τινα τῶν προκειμένων εὐμνημόνευτον γενέσθαι). In fact, conciseness is associated with summariness (Arist. *Metaph.* 988a 18). The sources listed here mostly deal with persuasion, or aim at instructing the reader, as is the case with historical, technical, and philosophical works. It is quite clear that they are mostly concerned with gist, rather than verbatim, memorization. Indeed, verbatim memorization of prose presupposes gist memorization, especially in the absence of phonetic aids. These features can sometimes even hamper gist memorization, as is the case with rhyme (see above). Mastering the meaning is particularly crucial to long-term memorization of sentences. The syntax and the exact wording are regenerated upon recall, rather than memorized as such. This process is aided by constraints provided by elements other than the syntactic structure of the *memorandum* itself. These include the effect of syntactic parallelism, which makes it easier to recall similar structures that follow one another (priming) and to a very small extent, phonological information, which only plays a relevant role in immediate recall.[52] To sum up, conceptual (gist) information is retained more effectively and for longer than syntactic information, which in turn is more effective and better retained than word-level features (exact lexical items, exact position).

Memory for meaning depends to a great extent on the way information is organized. Incidentally, this idea can already be detected as underlying some ancient sources, too. To start with, the very method of τόποι is based on the observation that order (τάξις) supports memory (Arist. *Mem.* 452a 2–3). Later on, Diodorus Siculus declares that historical narration consisting of self-concluding (αὐτοτελεῖς) accounts is both clearer and easier to remember (16.1). Several remarks on memorability due to organization are found in Galen. Memorability is connected to clarity and correct

[52] Potter-Lombardi (1990), Rummer (2004).

methodology,[53] which are all unachievable without correct τάξις (*De sanitate tuenda libri VI* 6.62.2–8 Kühn). 'Methodic' teaching is both memorable and concise (*De sanitate tuenda libri VI* 6.419.11 Kühn) and consists of starting from the common categories without immediately expounding the details (*De sanitate tuenda libri VI* 6.166.15–167.1 Kühn). Elsewhere (*Ars Medica* 1.306.6–11 Kühn), Galen declares that starting from definitions, albeit not entirely methodologically sound, is much more functional to the purpose of memorization, both of general overviews and of individual facts. A good definition, he claims, contains the main points (κεφάλαια) of the entire art.[54] Athenaeus mentions alphabetical order (κατὰ στοιχεῖον) as a mnemonic aid (7.5.18 Kaibel), which is also reminiscent of the theory of τόποι.

If it is true that remembering the meaning is crucial, the amount of information also matters to both gist and verbatim memorization. In general, upon learning, information is divided into separate chunks and stored as such in one's working memory.[55] This is also the case with linguistic information. Linguistic input of all sorts is separated into units of different sizes, ranging from single words to lengthy and complex sentences. The size of such chunks depends on the degree of coherence of the text, that is, "the degree in which parts of a text make up a unified whole instead of being a set of unrelated utterances".[56] Unrelated words in a list are stored each in its own chunk, whereas verbose but textually 'compact' syntactic structures can be assigned to one single chunk. Experimental research has found that the number of such chunks affects memory more than their size.[57] With the number of words being equal, verbatim recall is better when text is divided into fewer chunks: as it were, three short sentences consisting of three words each are recalled less effectively than one nine-word sentence. Related sentences are recalled better than

53 On which see Tieleman (2007).

54 Both Aristotle and the *Rhetorica ad Alexandrum* mention summaries of the main points (εἰπεῖν κεφαλαιωδῶς) as being typical of proems (Arist. *Rh.* 1415b, *Rh.Al.* 29.12). A fully aware example of this practice is Polybius 1.13.

55 Rubin (1995): 102–3.

56 Bakker-Wakker (2009a): xii.

57 Gilchrist et al. (2008), Gilchrist et al. (2009).

unrelated sentences,[58] and this is also true of sentence-internal relations between clauses. Across languages, hypotactic structures have been found to be better recalled than semantically equivalent paratactic structures.[59] In German, for instance, this shows with sentences where a causal relation is expressed with a subordinate clause (introduced by *weil* 'because'), as opposed to sentences where the same relation is expressed by a coordinate clause (introduced by *deshalb* 'therefore'; of course, this conjunction would introduce what would be the main clause in a *weil*-sentence). This effect is a purely verbatim one, since the gist content of both types of structure is the same. Apparently, the surface representation of the content (that is, the actual wording) and the syntactic representation it entails have a substantial effect on how information is chunked and stored in memory. Subordinate clauses are seemingly parsed as integral parts of their matrix clauses and are merged with them into one chunk. Coordinate clauses, instead, are stored in separate chunks, and according to Caron et al. (1988), they are recalled even worse than independent asyndetic sentences: some coordinators should work as inhibitors for the establishment of inferential relationships across clauses, whereas such relationships might be more freely inferred from the juxtaposition of syntactically independent asyndetic clauses.

As a consequence, the ratio of subordinate verbs to the total count of verbs can be considered a good indicator of the degree of coherence of a text and a positive factor as far as memorability is concerned. On this point, Greek presents specific problems. Sometimes clauses introduced by a subordinator (such as conjunctions or relative pronouns) or syntactically and morphologically marked as subordinate (for instance, accusative and infinitive constructions) are used as syntactically independent clauses. This is normally indicated by punctuation in writing and prosody in speech. Now, in Greek reported speech, for instance, long sequences of dependent infinitives appear, which one would rather break into sequences of

[58] Jefferies et al. (2004), Miller-McCown (1986). The positive effect of text organization on memory applies regardless of the contents (the memory advantage for concreteness over abstraction disappears in coherent texts), see Marschark (1985).

[59] Caron et al. (1988), Engelkamp-Rummer (2002), Rummer et al. (2003).

independent clauses. If we wished to operationalize text coherence in this way, we could count as subordinate only the first infinitive following a superordinate verb of saying. Jussive infinitives and verbless clauses (ἀνάγκη, εἰκός, etc.) should also be counted as main verbs.[60] Other difficult cases would require defining criteria which would be hard to justify consistently from a linguistic point of view. For instance, the function of infinitives might be prevailingly substantival or prevailingly verbal. The same problem arises with participles.[61] Infinitives and participles introduced by subordinating conjunctions (e.g. ὥστε, πρίν for the infinitives, ὡς for the participles) can quite confidently be counted as subordinate verbs. Periphrastic forms could be counted as one verb. However, most occurrences of participles and infinitives in other contexts are much less unambiguously classifiable. Verbless clauses can also be problematic. Across languages two major types of verbless clauses can be distinguished. In the first type, the copula is simply omitted but can be found in equivalent expressions (as in the Greek 'minimal pair' δῆλον ὅτι / δῆλόν ἐστιν ὅτι). These clauses are called *zero-verb clauses*. In contrast, *nominal clauses* never admit a verb and cannot be opposed to equivalent constructions with an overt verb. Examples of nominal clauses are found in several languages[62] but not in Classical Greek. Scholars have tried to draw a distinction between Greek zero-verb and nominal clauses by claiming that restoring the copula in zero-verb clauses would not affect their meaning, whereas adding it to alleged nominal clauses would. In

60 Cf. Dover (1997): 28–30, 72.

61 Pompei (2006) discusses the position of different type of participles in an intracategorial *continuum* between nouns and verbs: the main pragmatic function of nouns is reference, whereas that of verbs is predication. Adjectives, whose main pragmatic function is modification, stand in between. In the same paper, she also points out that, from a semantic and syntactic point of view, Greek participles not all 'equally subordinate', if a gradient between parataxis to hypotaxis is posited, based on Lehmann (1988). I am not aware of specific research on any psycholinguistic correlate of a 'subordination gradient'.

62 Mel'čuk (2009): 45–7, Stassen (1997): 76–91. Guiraud (1962): 9–10, following Bally, distinguishes between zero-verb clauses, whose verblessness abides by precise grammatical rules (as happens in Turkish or Russian) and that do not exist in Greek, and implied-verb clauses, of which Greek nominal sentences are an instance. In his view, all Greek verbless clauses imply a copula, this phenomenon being more common in certain semantic domains than others.

particular, timelessness has been regarded as a feature of alleged nominal clauses.[63] Cross-linguistic analysis, however, has revealed that the presence or absence of the copula is unrelated to the degree of tense-, aspect- and mood-markedness of a predication;[64] that is, 'timelessness' in zero-verb clauses is not determined by the absence of the copula. As a consequence, all Greek verbless clauses must be regarded as instances of zero encoding of the predicate.[65] If the omitted verb is not the copula but must be 'copied' from the preceding clause, zero-verb clauses can be called *elliptical*.[66] Now, some elliptical expressions are used idiomatically in Classical Greek. A good example is εἰ δὲ μή (*'otherwise'*, as a discourse marker). Are such expressions to be counted as subordinate clauses?[67] Elliptical clauses with a different subject from that of the clause where the verb must be inferred from should be easier to interpret from the point of view of memorization, since they resemble items in lists, which are stored in working memory as separate chunks, even when they should consist of only one word. An elliptical expression like οἱ μὲν Ἀθηναῖοι σέβονται τοὺς θεούς, οἱ δὲ Λακεδαιμόνιοι οὔ could well be counted as a clause. The same applies to zero-verb clauses (those where the copula is omitted).

I mentioned above that longer sentences are recalled better than shorter sentences, if the *total* number of *words* to be recalled is the same. Interestingly, Quintilian recommends 'chunking' as a method for learning exceedingly long speeches by heart (*Inst.* 11.2.27): *'si longior complectenda memoria fuerit oratio, proderit per partes ediscere (laborat enim maxime onere); sed hae partes non sint perexiguae, alioqui rursus multae erunt et eam distringent atque concident'.* Quite significantly, he suggests that

63 A (numerically) minor type is exclamations, see Humbert (1960): 68.

64 The lack of cross-linguistic validity of the 'dummy hypothesis' (according to which the copula is a semantically empty element working as a morpheme rather than as a lexeme and is only expressed when tense, aspect or mood are marked) shows exactly this: "there does not seem to exist a universally valid connection between zero/full encoding of predicate nominals and the degree of bound [tense-aspect-mood] marking in verbal systems of languages", Stassen (1997): 75.

65 Stassen (1997): 109–13, Guiraud (1962): 9–10.

66 Devine-Stephens (1999): 79. Cf. Guiraud (1962): 10. Elliptical clauses are instances of *asymmetric parataxis*, see Nir-Berman (2010): 750.

67 What about non-elliptical idiomatic expressions like ἔστιν ἅ (*'some'*)?

'chunks' should not be too short, in order to avoid their proliferation, which makes perfect sense in the light of the experimental findings we have just discussed. With the total number of *chunks* being equal, however, it is their size that makes a difference: shorter chunks are remembered better than longer chunks,[68] as common sense would suggest, too. Verbatim recall consists in the regeneration of the exact wording starting from the gist. The more words one needs to reconstruct, the more demanding this task. Quite importantly, words that are active in discourse are easier to recall; hence the effects of priming and constraining we have described above. Potter-Lombardi (1990) have suggested that closed class function words are permanently active, and therefore they do not need to be remembered but are simply inferred. As a matter of fact, Schweppe et al. (2009) found that clauses with a high proportion of function words are recalled better than clauses with a high proportion of open class content words. Therefore, the ratio of function words to content words can be taken as a *negative* indicator of the amount of text to be memorized (the higher the ratio, the smaller the amount).

The total size of a text *should not* come into play. One can argue that a long text can be difficult to memorize because it may consist of many chunks (sentences) and because of the size of individual chunks (amount of open class words). Incidentally, recall of specific sentences or passages is not affected by the size of the text itself: a sentence can be memorized as well if it is part of a long text as if it is part of a short text.[69] A study of this kind should regard the *language* used in a text as the only indicator of its memorability, regardless of *for how long* such language is used. As it were, this is equivalent to claiming that Shakespeare's sonnets are easier to memorize than technical prose, regardless of how many sonnets or how many pages of a handbook one wishes to learn by heart. As Quintilian puts it (*Inst.* 11.2.8), *'[memoria] verborum ordinem praestat, nec ea pauca contexit sed durat prope in infinitum et in longissimis actionibus prius audiendi patientia quam memoriae fides deficit'*. If a text is easy to memorize, its length will not be a major drawback.

68 Gilchrist et al. (2008), Gilchrist et al. (2009).

69 Johnson, R. E. (1986).

6.4 Operationalizing memorability?

Verbatim memorization of text is affected by several factors of very different kind. Some are relatively straightforward to operationalize (coherence, conciseness, phonetic similarity), even though they may raise problems which would require some arbitrary decisions to be made in order to be worked around. Other factors, however, seem impossible to operationalize in the same way. Now, a major methodological problem for a study of this kind is that we do not know to what extent each factor affects the memorability of text exactly. We know that they all do and that in experiments designed to ascertain the effect of one of these factors, all the others should ideally be controlled for. This prevents us from (a) assessing the weight of the un-operationalizable factors, in case we decided to disregard them, and (b) establishing a way of combining the operationalizable factors into one general indicator of memorability. Even if we succeeded in solving these problems and were able to obtain an indicator, all that we could do would be rank texts and compare them with one another, just as in the case study of clarity. In that case, I have operationalized difficulty in such a way as to be able to rank the texts on an absolute scale ranging from 0 to +∞. The factors I have highlighted as affecting memorability, however, do not affect it by their presence or absence—as was the case with structures inducing reanalysis affecting clarity—but by their *degree*. Moreover, such degrees must reach their 'optimal' levels: memorability as such does not seem to be related to any of these factors in a linear way (if it were, *per absurdum*, a text only consisting of function words should be infinitely memorable, and so would a text consisting of one massive sentence, with one main clause and a plethora of subordinate clauses, or one only consisting of one consonant).

These limits could only be overcome if further experimental research were successful in developing a comprehensive model of human memory for text, which should ideally be computational. If the quantitative predictions of such a model should consistently correspond to the results of experiments involving native speakers of modern languages, then we could compute numeric indicators of the same kind for dead languages. The experimental results would provide us with a

scale against which the predicted (or rather, reconstructed) scores could be measured. Let us imagine that a computational model assigned more or less the same memorability score to texts in several different modern languages and that the experimental measures of recall for all these texts were more or less the same. If this were the case, it would be possible (a) to employ the computational model to calculate the score of any Greek text, and (b) to infer that its recall score would be the same as that of the modern language texts, if we were able to perform an experiment on a native speaker of Classical Greek. Pertinent recall measures could be obtained experimentally by recreating the composition and transcription scenarios envisaged for the ancient Athenian writers and by testing the degree of correspondence between oral and written versions of texts, whose relevant features should be carefully manipulated by the experimenters.

An experiment of this kind seems easier to devise than to design and put into practice. A major question it would have to tackle is the effect on memory of prose rhythm of an ancient Greek type. As we have seen, this is probably the hardest factor to operationalize in a rigorous way. In order to ascertain the actual weight of this type of rhythmicity, experimenters should be able to devise modern equivalents for every language included in their research. This would allow counting on 'native ears' to tell what sounds more or less rhythmically 'good' in each language at the design stage and would enable testing to what extent this factor affects memorability, if at all. If this effect should be proved to be limited enough, one might decide to ignore prose rhythm when dealing with the memorability of classical texts. Otherwise, the weight of this effect could be taken as a confidence interval for the scores computed on the grounds of the other factors—the only ones which can be operationalized.

As it stands, this chapter poses more problems than solutions. At the present stage, all the features discussed can only be assessed separately from one another, which would be neither meaningful nor useful for this approach to the history of texts. At the same time, these limits call for further research requiring a close collaboration between classicists and psycholinguists. Progress in this field would cast some new light on the very earliest stages of text composition and transmission.

7. Conclusion

Writing a journal article is quite different from preparing a conference paper on the same topic. In the former case, the author knows that readers can manipulate their access to the text at their own leisure. He/she can, and would, even prompt them to interrupt the natural flow of the text and seek for clarifications by means of footnotes and external references. When preparing a talk, in contrast, an author knows that he/she is only allotted a limited time, which he/she must employ to present his/her arguments as clearly and convincingly as possible. He/she might decide to read out from a ὑπόμνημα or to speak off the cuff. Hopefully, nobody would interrupt him/her as he/she speaks, and any requests for clarification are postponed to a different moment, according to established social conventions (norms of interaction) which the author is well aware of. This would still allow him/her to be more concise than absolute clarity would require at times, but on the whole, he/she would ideally spend considerable effort in making the audience comfortable in following his/her train of thought. On the other hand, it does not follow that a journal paper *cannot help* being obscure and hard to follow if presented orally to an audience, even if this mode of performance should never be envisaged by the author. Overall, it is simply more likely to find 'obscure' texts among journal papers than among conference papers.

A similar picture emerges from the case study presented in this thesis. On average, written versions of texts that were conceived for public delivery present fewer potential processing difficulties than those for which public delivery was not envisaged from the start. Quantitative comparison shows that the difference between the two samples is statistically significant. This result confirms the first part of the starting hypothesis of this study: we can conclude that the Athenian prose writers surveyed here optimized their text for the *audience and mode of performance* they envisaged.

Quite importantly, figures for individual texts show that *both* public and private speeches can score *low* on the difficulty scale, but *only* private speeches score *high.*

An ancient author who composed a text for public delivery would more or less consciously avoid ἀσάφεια, but it does not follow that someone who wrote for a small group of listeners or collective readers would avoid σαφήνεια. Rather, he would not consider writing as clearly as possible an absolute priority. As a consequence, he might consciously or unconsciously take less care of keeping a text devoid of any hindrances to immediate comprehension. As I mentioned in the discussion of the case study (5.6), one could want to use these results in *predictive* way: if a text scores *high* on the difficulty scale, this could be regarded as evidence for the fact that it was envisaged for private performance. Now, the question is, *how high* is high? In pairwise comparisons between the highest-scoring public speech (D. 15) and private speeches, starting from the lowest-scoring one (Pl. *Ap.*), the difference in difficulty only reaches statistical significance level when D. 15 is compared to Antipho 4 (3 reanalyses : 2238 words < 11 reanalyses : 1928 words, $p = 0.0308$). I am not giving any normalized values (relative frequencies, expressed as ratios of reanalyses per word) for a reason: the statistical significance of the difference between these two texts does not only depend on the *proportions* their scores express, but also on the *size* of the texts. If the same proportions were found in texts of different sizes, the statistical significance of the difference between the proportions would change: the bigger the sizes of the texts, the higher the significance. For instance, 110 : 19280 is 'much more different' from 30 : 22380 than 11 : 1928 is from 3 : 2238. The difference between the same proportions calculated per 1000 words (5.7 and 1.34 respectively) is not even statistically significant. This means that if one should try and compare another text to any of those included in these study, one should choose a text, or a portion of it, which measures about the same size as the benchmark.

Low scores, on the other hand, are always inconclusive: at that end of the scale, public and private speeches are virtually indistinguishable from a quantitative point of view. In such cases, one should still rely on external evidence to reconstruct the history of the composition and publication of the text.

I also think it noteworthy that some variation in the degree of difficulty shows across texts of the same author. The clearest case is that of Antiphon. Plato's texts show

near-significant difference between each other (p = 0.0771), similarly to Isocrates' two lowest-scoring texts, *Trapeziticus* and *Evagoras* (p = 0.0762). These scores show that if a difference is there, it *might* be related to the mode of performance (as one can argue about Antiphon and possibly Isocrates), but this *need not always* be the case (as it seems with Plato: both the *Menexenus* and the *Apology of Socrates* should have been performed in private contexts, at least originally). More importantly, this study shows that *difficulty is not directly related to authorship*: nothing points to the fact that an author should always be difficult, or the opposite. It might well be the case that all the extant texts of an author are difficult, but generalizations are not justified.

From a methodological point of view, in Chapter 4 I have shown that analysing Greek prose in the light of models and findings of experimental psycholinguistics is possible, and that it helps avoid to read Greek through the lenses of one's own mother tongue and of the written medium. The word-by-word method of analysis I suggest enforces an abstract analysis of the syntactic, semantic, and collocational properties of each word. These were part of the unconscious linguistic competence of a native speaker, and *only partially* of that of proficient readers of Classical Greek. It seems to me that many 'impressions' of difficulty are due to the lack of one-to-one correspondences between the critic's mother tongue and Classical Greek. As an example, let us go back to the sentence from Antiphon which Gagarin assumes to have been hard to understand even for a native audience:[1]

> ἀπολύει δὲ καὶ ὁ νόμος ἡμᾶς, ᾧ πιστεύων, εἴργοντι μήτε ἀδίκως μήτε δικαίως ἀποκτείνειν, ὡς φονέα με διώκει (Antipho 3.2.9)
>
> 'The law acquits us, trusting in which, which prevents to murder both unjustly and rightly, he prosecutes me as a murderer'

I suspect that the impression of difficulty for this sentence stems from the fact that, in English as in other modern European languages, the most immediate way of *understanding* (and translating) the function of a participle which agrees with a noun

[1] Gagarin (1999): 170, Gagarin (1997): 33–4. Cf. 4.3.

in an oblique case is by means of a relative clause. As my literal translation shows, one would *feel* that in this sentence, a 'relative clause' (εἴργοντι) modifies a relative pronoun (ᾧ). Moreover, another conjunct participle intervenes, which I suppose might further disrupt *our own* comprehension. I see no reason why this ought to have been the case for a native speaker of Classical Greek. The syntactic and semantic function of all constituents is clear and unambiguously marked by morphology and word order. To a Greek hearer, εἴργοντι *was not* a relative clause; it was just a participle, unambiguously agreeing with the relative pronoun, its notional subject.

Since we are dealing with a dead language, the validity of the reconstructions of comprehension processes cannot be tested experimentally, in the absence of native speakers. As I mentioned (4.3), the only 'real-life' benchmarks for such reconstructions are the explicit mentions of difficult passages in the ancient sources. If we were dealing with ancient descriptions of the symptoms of some medical condition, modern knowledge would in many cases allow us to identify the disease (that is, to diagnose it) regardless of ancient diagnoses, which need not be correct from the point of view of modern science. Analogously, when a native speaker of Classical Greek gives an example of what he perceives as a linguistically difficult, we can regard this as the *symptomatology* of the linguistic structure of that passage. The ancient *diagnoses* (that is, the explanations the ancient critics provide for difficulties) are not necessarily correct. There might be cases in which a medical description leaves us clueless as to what disease is being described. This would point to either to the inadequacy the description itself or to deficiencies in our knowledge. So far, the methodology outlined here has always been able to provide a plausible 'diagnosis' for the 'conditions' mentioned in the ancient sources, which I take as an encouraging indicator of its adequacy. Of course, no claim for *total* accuracy can be made, especially since research on language comprehension of modern languages has not yet developed totally accurate predictive models either. It will not have gone unnoticed but should not have been surprising that all the analyses presented in Chapters 4 and 5 are punctuated with modal verbs. As it often happens in

Altertumswissenschaft, sometimes 'coulds', 'mights', 'shoulds', and 'woulds' are the most accurate type of statement one can aim for. All we can do is to limit the scope of arbitrariness and speculation as much as possible and, ideally, to ensure that the results of the analyses are replicable, as good scientific practice would require. One might question whether this is a realistic goal in linguistic studies on dead languages.

Let us now turn to the second part of the starting hypothesis that ancient writers optimized their text for *the speaker and the envisaged mode of performance*. In public contexts where decisions were made, speakers did not normally read aloud from written texts. Rather, they either improvised their speech or, most frequently, prepared it in advance and memorized it. Even with such preparation, they would still have to combine improvisation with delivery from memory. In Chapter 6 I set forth the hypothesis that, as a consequence of this constraint, someone writing for a public speaker (who might or might not be the author of the speech) would devise some ways to make the speech easier to learn by heart. This hypothesis has proven untenable: memorization was not only practiced for public literature, but it was also common for private texts. Here, it is necessary to draw a neat distinction from clarity: whereas clarity was an *explicit desideratum* for public texts and might happen to be a feature of private texts as well, memorability would be an *implicit desideratum* for *both* types of texts and cannot be hypothesized to be a distinguishing factor between them. It is not surprising that a specific and systematic discussion of memorability is completely absent from the ancient rhetorical handbooks. Instead, the ancient rhetoricians put much thought and effort into developing an elaborate theory and practice of mnemotechnics which should allow a skilled memorizer to learn virtually any text by heart, regardless of its complexity and length.

A by-product of this reasoning is the idea that, if it should ever be possible to quantify the memorability of a text, this would be an indicator of the degree of correspondence between the written and the orally delivered version of that texts. If a speech was composed in writing before delivery and was memory-friendly enough, it is likely that the speaker would have recalled the exact wording relatively easily upon delivering it. Conversely, if a speech is a transcription of an orally

delivered one and the expressions which the speaker improvised upon delivery were memorable enough, he would have reused them in the written redaction as well. Unfortunately, memorability seems very difficult to operationalize in an accurate and representative way. Indeed, to my knowledge, a comprehensive measure of memorability has not yet been developed for modern languages either. This is an issue of general psycholinguistics, and further experimental research is highly desirable.

As a final point, we can speculate about how the difficulties I detected in Chapter 5 would realistically affect performance and communication. The sources I summarized in Chapter 2 describe at least two main types of interaction between the audience and a text in a private speech situation:

a. In *Parmenides* 127c–d, we are told that Socrates listened to Zeno reading to the end, and only then did he ask him to read again the first thesis. Similarly, in *Phaedrus* 227a–8b, Socrates guesses that Phaedrus would have asked again and again to Lysias to repeat his speech to him.
b. In *Protagoras* 343c–e, Socrates and Protagoras quote a passage from a poem of Simonides and dispute over its grammatical interpretation (see 4.2.4).

Now, it is unlikely that the interaction described in the *Parmenides* and the *Phaedrus* would have been prompted by some linguistic difficulty: repetition would be asked either for the sake of listening to a pleasant text again (and, possibly, of learning it), or in order to discuss the *contents* of the text. In the *Protagoras*, the passage from Simonides is analysed, in a sort of 'live scholion', from a linguistic point of view in the first place, in order to attain the right interpretation of the meaning. We can imagine that this sort of exact analysis would be induced by difficulties and ambiguities such as those raised by a sentence like (90) from Chapter 5 (Th. 2.42.4), for instance. Even native speakers apparently needed to make an unusual effort to understand Thucydides.[2] Most other difficulties would only induce milliseconds of puzzlement and disruption in the hearers' understanding instead. Such effects would be similar to those engendered in English by ambiguous sentences like *'a village in*

[2] Cf. 5.4.12.

the upper reaches of the river, which is a popular destination of water tourists and bathers'[3] or by so-called 'garden path' sentences like *'the man returned to his house was happy'*, or *'the government plans to raise taxes were defeated'.* With this kind of ambiguities, the meaning becomes clear either as the parsing of the sentence reaches completion, or on the grounds of to the information inferred from the discourse context. Presumably, an ancient critic would find this type of difficulty remarkable and comment on it only when there would be no way to determine the correct meaning.[4] Otherwise, we should not expect these ambiguities to be recorded in the sources as such, even though they might still appear in passages which ancient critics deemed difficult for other reasons. Still, this type of ἀμφιβολία was not desirable,[5] especially when one's life, money, or political career depended on speaking convincingly to a noisy, judgmental[6] and not always friendly audience.

Public and private speech situations were quite different, and it was necessary that a speaker's language suit them. Indeed, this was the case.

3 I have taken this example from an English translation internet forum.

4 As, for instance, in Arist. *SE* 166a 6–7, *Po.* 1461a 25.

5 Demetr. *Eloc.* 196

6 Arist. *Rh.* 1358b 2–6.

Appendix 1. The physiology of ancient Greek reading

In the 1980s and 1990s, the medievalist Paul Saenger argued in several publications[1] that it was physiologically impossible for the ancient Greeks and Romans to read silently. His contributions revived an age-old controversy, which was first raised by Balogh in the early 20th century and seemed to have been settled in 1968 by Knox, who concluded that silent reading was possible and not even unusual in antiquity.[2] Unlike his predecessors, however, Saenger did not base his arguments on the interpretation of the literary sources for ancient reading but tackled the question from the point of view of cognitive psychology. He developed a detailed model of the processes involved in reading ancient *scriptura continua*, claiming that the very lack of word-separation made vocal rehearsal necessary for the readers to recognize the words. Classical sources hinting at silent reading,[3] in his view, might rather refer to silent or to sub-vocal oral reading—a sort of mumbling.[4]

Since their first appearance, Saenger's ideas have been met with partial acceptance or more or less harsh criticism by classicists. Svenbro, for example, acknowledges that *scriptura continua* hindered silent reading.[5] However, he also maintains that the Greeks were able to practise it due to a change of attitude towards the written word. Ingeniously, but questionably, he argues that silent reading implies a passive attitude for the reader who relates to the text as the spectator in a theatre, and he introduces as evidence for this new attitude literary and epigraphic allusions to such passivity (that is, 'speaking texts' that need no active 'solicitation' from the reader, who is just supposed to 'listen').[6] Thomas accepts Saenger's views about the importance of interword spacing for the development of silent reading but does not mention their

1 Saenger (1982), Saenger (1989), Saenger (1991), Saenger (1997).
2 Balogh (1927), Knox (1968). Cf. Werner (2008): 337.
3 A useful list in Gavrilov (1997): 70–1. Cf. Saenger (1982): 370–6.
4 For the distinction between 'silent oral reading' and 'true silent reading', see Pugh (1975): 114, Pugh (1978): 27–8. Cf. also Saenger (1989): 944–9, Saenger (1997): 8–9.
5 So does also Pébarthe (2006): 23, 71.
6 Svenbro (1993): 160–86.

*A slightly different version of this appendix has appeared as Vatri (2012).

final implications concerning the impossibility for the Greeks to read silently.[7] Raible adopts the whole model as is, only adding the claim that a text in *scriptura continua* could be read silently if only one already knew it well.[8] Gilliard, on the other hand, rejects Saenger's ideas as being "led astray by Balogh's work",[9] which he dismisses by opposing the same common-sensical observations against the exclusivity of oral reading in antiquity that had been presented by Knox: "are we really to imagine that Aristarchus read aloud all the manuscripts of Homer he used for his edition?".[10] However, as Johnson points out, this argument is not appropriate, since "our modern cultural construction of scholarly efficiency is predicated on silent reading".[11]

In 1997, an article by Gavrilov appeared which dealt with the question of ancient reading and its physiology.[12] This article is totally independent from Saenger's publications, none of which are cited, and it comes to the opposite conclusion, that is, that the ancients must have been able to read to themselves in order to be able to read out loud. Unfortunately, Gavrilov's article has two major flaws. First of all, reading to oneself is questionably equated to reading *silently* to oneself. Secondly, the psychological literature on which the argumentation is built is incomplete and out-of-date.[13] Johnson, however, takes Gavrilov's paper for an argument against Saenger's cognitive model, opposing the former's "ability to use 'science' to 'prove' the conclusion he brings to investigation" to the latter's.[14] This refutation is unsatisfactory and hardly acceptable.

1. Saenger's model reconsidered

The advances in experimental psychology in the last few years allow us to reexamine

7 Thomas (1992): 23.
8 Raible (1991): 8.
9 Gilliard (1993): 693.
10 Knox (1968): 421–2.
11 Johnson (2000): 605.
12 Gavrilov (1997).
13 *Pace* Johnson (2000): 598. The works referenced by Gavrilov all appeared between 1927 and 1979.
14 Johnson (2000): 598.

every point in Saenger's argumentation. In the present discussion I will follow the structure of the latest version of Saenger's cognitive model (see note 1).

1. First of all, Saenger assumes that reading different types of script implies different cognitive processes.[15] Reading logographic scripts is a merely visual task, while alphabetic or syllabic scripts need the conversion of graphemes into phonemes, so that meaning can be accessed through phonology. This model can be described as a 'dual-route model'.[16] Logographic scripts activate the 'lexical route' and word recognition is merely orthographic. Printed words, after being visually input, are looked up as units in the mental orthographic lexicon. Alphabetic or syllabic scripts instead activate the 'nonlexical route' (or 'grapheme-phoneme correspondence route') which needs prior 'phonological recoding'. Support for the dual-route model has been drawn from the fact that the aural and the visual recognition systems are physiologically separate in the brain (impaired subjects can independently lose or retain skills necessary for either process).[17]

   An important corollary of the dual-route model is that logographic scripts can do without phonological recoding.[18] As a consequence, whereas readers of phonetic scripts should be able to read nonwords using the nonlexical route, for readers of logographic script this would be impossible.[19] However, one must bear in mind that pure logography does not exist: all natural logographic scripts give clues to the phonetic value of the character. Most Chinese characters, for instance, are made up of two elements, a semantic radical and a phonetic component. Phonetic components normally encode syllables[20] and do not have a consistent value. Therefore, their phonological

15 Saenger (1997): 1–3.

16 Coltheart et al. (2001). Further references in Chua (1999): 876 and Share (2008): 587.

17 Such cases are described, for instance, in Papagno-Girelli (2005) or Caramazza-Hillis (1991). Further references in Coltheart et al. (2001): 211, Saenger (1997): 3, and Besner et al. (1986): 46–7.

18 Chua (1999): 876, Liu et al. (2006): 224, and Cho (2009): 417.

19 Chua (1999): 876–7.

20 McBride-Chang-Kail (2002): 1393–4.

value cannot be activated nonlexically (through a grapheme–phoneme correspondence), as it would be the case with alphabetic graphemes. Nevertheless, experiments have shown that phonology does interfere with word recognition in Chinese, and that the lexical and the nonlexical route must work together. It has even been found that nonwords, written as pseudologographs, can be pronounced.[21]

On the other hand, experiments have confirmed that alphabetic scripts elicit phonological recoding in both silent and, naturally, oral reading.[22] According to the dual-route model, word recognition in this case should depend only on the grapheme-phoneme correspondence. However, it has been found that lexical processes play a major role even in Italian, a language with transparent alphabetic orthography.[23] In conclusion, in all graphic systems lexical (orthographic) and nonlexical (phonological) processes interact in word recognition,[24] with the lexical route leading the way. Things are not so clear-cut as Saenger believes.

2. Saenger remarks that oral recitation is necessary for children to learn how to read alphabetic or syllabic scripts.[25] Phonetic script reading acquisition should presuppose phonological awareness, that is "purely spoken language skills" such as "the ability to perceive, segment and blend"[26] sounds, and it should be causally linked to graphemic awareness acquisition. Experiments designed to prove this causal connection have generally been unsuccessful:[27]

21 Chua (1999), Hu-Catts (1993), Hu-Catts (1998), and Guo et al. (2005). Neurological data confirm both phonological recoding in Chinese silent reading—see Ren et al. (2009)—and its association with visual word recognition, see Lee et al. (2010).

22 Most recently, de Jong et al. (2009) and Ren et al. (2009): 1623 for further references. For the Hebrew script, see Frost-Kampf (1993).

23 Pagliuca et al. (2008).

24 Cf. also Jacobs (2001), and Rastle (2007). Prosodic information at word level is also part of the word recognition process, see Ashby-Martin (2008). Cf. Yap-Balota (2009).

25 Saenger (1997): 3–5.

26 Castles-Coltheart (2004).

27 Castles et al. (2009). Cf. also Defior–Tudela (1994).

segmental awareness only develops once graphemic awareness is acquired.[28] Such studies, however, assume that phonemes are the basic speech units of a language and equate *phonological* awareness with *phonemic* awareness, which is a consequence and not a prerequisite of letter learning.[29] The development of phonemic awareness is not uniform across languages,[30] but phonological awareness at syllable and onset/rime[31] level is universal among preschoolers. This ability is not exclusive to alphabetic or syllabic reading acquisition. In fact, it has nothing to do with the writing system and is substantial for reading acquisition even in non-alphabetic orthographies such as Chinese, where it assists children in learning and using the phonetic component.[32]

3. Saenger argues that in the process of phonetic reading acquisition, children learn how to recognize the words holistically (as entire units) rather than synthetically (by putting together their phonetic components). If the boundaries between the words are not immediately detectable, children just start reading out loud in order to access the meaning through the sound: reading unseparated text necessitates repeatedly focusing on short sequences of graphemes and might lead to a memory overload which can only be overcome by the aid of vocal or sub-vocal activity.[33] Saenger infers that the ancient readers of *scriptura continua* must have experienced the same difficulties and that it was impossible for them to read silently.[34]

   As we have seen, in every graphic system word recognition is not entirely holistic: words are recognized as single meaningful units and analysed in

28 Carrillo (1994).

29 Cf. also Kosmidis et al. (2006).

30 It is more rapid in languages written in transparent orthographies and may not develop at all in languages written with a logographic system, see McDowell-Lorch (2008).

31 Syllables can be divided in onset (the part preceding the vowel) and rime (the vowel and any other following consonants).

32 Goswami (2006), Ho-Bryant (1997), Guo et al. (2005). Cf. McBride-Chang-Kail (2002): 1394.

33 Saenger (1997): 5–6 suggests that readers would use the phonological loop for this purpose.

34 Saenger (1997): 7–9.

their phonetic and graphic components at the same time. Indeed, it is their visual perception, which precedes actual recognition, that is generally assumed to be holistic.[35] In alphabetic script reading, the eyes move forward (in a movement called 'saccade') and stop ('fixation') by a 'preferred viewing location' (PVL), normally just left of the word centre,[36] bringing it to the centre of the visual field, where vision is most acute (foveal region). Eye movements are generally guided by visual attention: we look (voluntarily or involuntarily) in the direction of a visual input that 'stands out' for some reason.[37] As far as alphabetic reading is concerned, such visual cues are provided by word boundaries. Word boundaries normally lie in the parafoveal region (between 4° and 1° around the centre of vision), where vision is less acute[38] but word length and shape can be perceived.[39] In different graphic systems guidance can be provided by different elements.[40] Contemporary Western scripts—Saenger is right—use interword spacing. Experiments have found that removing spacing in English results in a remarkable decrement in reading rate, affecting both word identification and eye movements: when spacing is absent, the saccades land on the beginning of words rather than on normal PVLs.[41] Conversely, in other writing systems spacing is simply redundant. If spacing is added to scripts that do not normally adopt it, the readers do not experience any positive effect. Instead, the novelty of spacing can disrupt reading fluency.[42] The readers' deep rooted

35 Reichle et al. (2003), Engbert et al. (2005) (for an alternative eye-movement model).

36 Jacobs (2001): 8973 and Winskel et al. (2009): 339 for further references.

37 Moore et al. (2008): 294, Kowler (2008), Fischer, B. (1998): 295–9.

38 Rayner-Juhasz (2006). There is some evidence that some phonological, orthographic, and semantic information can even be retrieved from words that lie in the parafoveal area, which would allow parallel pre-processing of subsequent words. This seems to happen both in logographic and in alphabetic scripts, Hohenstein et al. (2010).

39 Juhasz et al. (2008). Exterior letter pairs play a major role in word processing in spaced alphabetic scripts, most likely due to their position, see Jordan et al. (2003).

40 Sainio et al. (2007), with a survey of previous studies.

41 Rayner et al. (1998) and Perea-Acha (2009).

42 Bai et al. (2008), Sainio et al. (2007), and Winskel et al. (2009).

habits play a major role, and this must also have applied to the ancient readers of *scriptura continua*. There is no reason to infer that reading unspaced texts was as problematic for them as it is for modern Western readers.

As a contemporary benchmark for ancient Greek and Roman reading, the Liberian Vai syllabary,[43] brought in by Saenger,[44] is a poor choice. Conditions much more similar to the classical scripts are found in Thai instead. Thai script is an abugida, that is an alphabetic script where the vowels are obligatory but not totally independent signs and combine with the consonants in different positions (above or below, left or right). It does not use interword spacing. Experiments have found that the eye movements of Thai readers are exactly the same as those of English readers: the saccades land on the normal PVL, left of the middle of the words. Word segmentation is as efficient for readers of unspaced Thai as it is for readers of spaced English.[45] Therefore, there is no reason to assume that reading unspaced text is a particularly demanding cognitive task in itself and Saenger's model must be rejected.

2. Visual segmentation cues in Greek

As we have seen, spacing is not indispensable for reading alphabetic scripts, as long as other segmentation cues provide immediate information about word boundaries.[46] Ancient Greek *scriptura continua* must be no exception.

Scholars have proposed several candidates for this function. Raible, for instance, remarks that later developments in the writing technique such as the introduction of the accent and breathing signs and of a consistent punctuation system improved the readability of Greek texts: grave accents mark word endings and breathings mark word beginnings.[47] Accents, however, were only introduced by Aristophanes of Byzantium and were mainly used for poetry in dialects other than Attic. Breathings,

43 For a description and history of the Vai syllabary see Scribner-Cole (1981): 31–4, 267–70.

44 Saenger (1997): 4.

45 Winskel et al. (2009).

46 Perea-Acha (2009).

47 Raible (1991): 10–12.

too, only appear from the 2nd century BC,[48] and the practice of drawing strokes over groups of letters to bind them together only started in late antiquity.[49] None of these devices were available to fourth-century Athenian readers, for example.

Classical sources, backed by the evidence of the earliest known Greek papyri, tell us that some sort of punctuation was already used in the first decades of that century.[50] In Athenian books, paragraphi were drawn under the first letters of the lines where a sentence ended or to mark a change of speaker in dialogues or dramatic texts. For the latter purpose a dicolon could also be used.[51] It is self-evident that this type of punctuation is of very limited relevance as a segmentation cue.

Johnson argues that segmentation could have been helped by the regular syllabic division of words at line ends in papyri columns.[52] Once again, this would help isolate but a minority of words in a text. A much more promising approach is suggested, once again, by recent studies on Thai reading.

As we have seen, eye movement programming in Thai readers works in the same way as in Western readers of spaced alphabetic scripts. Words are identified immediately, and the saccades land on the normal PVL. It has been thought that the cues that allow such instantaneous segmentation are letter combinations. Interestingly, a statistical study on a corpus of 2300 Thai words showed that 10 out of 74 characters occur at 76.4% of word endings and at 54.2% of word beginnings.[53] Moreover, sensitivity to the frequency of letters in initial and final positions, unconscious as it may be, has also been found in skilled English readers

48 Pfeiffer (1968): 180. Turner (1987): 11–12.

49 Turner (1987): 8.

50 Isoc. *Antidosis* 59, Arist. *Rh.* 1407b18 and 1409a20. Cf. Turner (1951): 6, Pfeiffer (1968): 179. Hyperides' mention of παραγραφή (Hyp. *Dem.* fr. c Kenyon = a Whitehead) is preserved by Harpocration with the meaning of 'time-limit'. See Whitehead (2000): 454, 471.

51 Turner (1987): 8–9, cf. Johnson (1994a).

52 Johnson (2000): 611.

53 Winskel et al. (2009): 349–50. citing Reilly, R. G., Radach, R., Corbic, D., & Luksaneeyanawin, S. (2005), 'Comparing reading in English and Thai – The role of spatial word unit segmentation in distributed processing and eye movement control', *Proceedings of the 13th European conference on eye movements.*

and plays a role in word recognition.[54] We might therefore explore the possibility that specific combinations of letters worked as segmentation cues for ancient Athenian readers.

Thanks to digital corpora such as the *TLG-E*, we are able to test this hypothesis on substantial extents of text. Letter frequencies are not affected by text homogeneity, that is, they tend to be the same in text fragments or samples ('quasi-texts') as they would be in full, independent texts. This allows a great freedom in the definition of a corpus for statistical analysis.[55] For this study, Thucydides' *History*, all the works of Isocrates (excluding the fragments), and Plato's *Apology* have been chosen. The total word count amounts to 278,098. A first test calculated the relative frequencies of bigrams at initial (#αα, #αβ etc.) and final (αα#, αβ# etc.) positions, and of word-final-plus-word-initial combinations (α# #α, α# #β etc.). In another test the occurrences of the following classes of letter combinations have been counted: (1) word-final-plus-word-initial; (2) bigrams in medial position (-αα-, -αβ- etc.); (3) initial and (4) final bigrams. Two-character words (#αα#, #αβ# etc.) have been counted separately (5). For every combination, the occurrences at word boundaries (1, 3, 4) have been summed up and divided by the total occurrences (1, 2, 3, 4). Two-character words are both initial and final bigrams at the same time and would therefore be counted twice. In order to avoid this, their sum has been subtracted from both totals. The final formula of the frequency calculation is:

$$\frac{(1)+(3)+(4)-(5)}{(1)+(2)+(3)+(4)-(5)}$$

Designing a heuristic study of this kind poses several problems. First of all, we cannot take for granted that the original Athenian texts looked exactly as they do in modern editions. Even though we can confidently assume that all the texts in the corpus were originally written or at least published[56] in the Ionic alphabet,[57] we do

54 Pitchford et al. (2008), cf. Dąbrowska (2004): 25.

55 Grzybek et al. (2004): 51, Grzybek (2006a): 18.

56 Marchant (1937): xxvii-xxviii and Litchfield (1912) argue that Thucydides used the Attic alphabet, or at least, a transitional Ionic-Attic alphabet.

57 Pfeiffer (1968): 30. Cf. D'Angour (1999): 122–3.

not know to what extent writing rendered phonetic phenomena such as assimilations and elisions.[58]

In literary prose papyri, elided forms or *scriptio plena* are rarely used in a consistent way even by the same scribe.[59] In prose inscriptions elision is customary for bisyllabic prepositions by the fourth century; it applies sometimes to the compounds of δέ and is very unusual for τε and compounds. It can be found in cardinal numerals ending in α or ε but is exceptional for ἵνα and normal for ὅσα and ὁπόσα before ἄν.[60] Assimilation in mono/bisyllabic and compound words is common in fourth-century Attic inscriptions and in the earliest papyri.[61] In the Derveni papyrus,[62] for instance, final -ν is often assimilated to initial consonants, but never at the end of a line or before λ. Since no rules can be consistently applied, we must make do with the text as is, with the awareness that the occurrences of some letter combinations might score lower than they would in fourth-century copies. This would be the case with μ μ, μ π, μ β, μ φ, μ ψ, γ κ, γ γ and γ χ: final -ν, especially in articles, might have been assimilated to μ before labials or to nasal velar γ before velars.[63] Final -κ might have been assimilated to -γ before β, δ, λ, μ, and ν, or to -χ before φ or ϑ.

Text divisions and punctuation would provide some information about word boundaries, but it would be hard to reconstruct the exact placement of paragraphi in a fourth-century prose manuscript. Modern punctuation is not always reliable for this purpose. Therefore, I have left out all punctuation information, which entails some error in the count of (1). In the *TLG-E* texts I used, 3 full stops occur every 100 words. If we consider them as placeholders for ancient paragraphi, the margin of error will amount to a mere 3%. For analogous reasons, I have preserved the

58 In Modern Greek, the resolution of hiatus by means of assimilation or elision is a phonological gradient and is constrained by other prosodic and pragmatic factors (vowels around major boundaries and in focused words are neither elided nor assimilated). Long vowels also tend to resist such phenomena. See Baltazani (2006).

59 Turner (1987): 8. Cf. Mayser-Schmoll (1970): 132–5.

60 Threatte (1980): 419–23.

61 Mayser-Schmoll (1970): 198–210. Threatte (1980): 579–640.

62 The dialectal attribution, though, is still debated. Turner (1987): 92, Funghi (1997): 26, Betegh (2004): 61–2, Kouremenos et al. (2006): 15–17.

63 There are no examples of -ν > -γ before ξ. Mayser-Schmoll (1970): 205.

traditional division of Thucydides' work and the titles of Isocrates' speeches. All the occurrences of iota mutum were read as iota adscripts.[64]

In the first test, the frequency of initial and final bigrams and of word-final-plus-word-initial combinations has been calculated. The sum of the occurrences of each bigram has been divided by the number of words in the corpus. The following table shows the ten most frequent bigrams in each position and the percentages of word boundaries for which they account.[65] This test, of course, is less powerful than the second, in that it does not take into account internal bigrams.

#κα	7.84	αι#	9.84	ν# #ε	4.86
#το	6.17	ων/μ/γ#	8.4	ι# #τ	4.84
#τη	3.15	ον/μ/γ#	5.67	ν# #τ	4.36
#με	2.9	ις#	4.7	ν# #α	4.06
#τω	2.82	υς#	4.44	ς# #ε	3.59
#ου	2.76	ιν/γ#	4.31	ς# #τ	3.57
#δε	2.73	ας#	4.3	ς# #α	3.12
#πρ	2.55	εν/μ/γ#	4.11	ν# #ο	2.72
#πο	2.5	ην/μ/γ#	3.58	ν/γ# #κ	2.68
#τα	2.37	οι#	3.56	ν/μ# #π	2.63
total:	35.79		52.91		36.43

7.84% of the words start with κα, 9.84% end in αι, and in 4.86% of word sequences the first word ends in ν and the next starts with ε. Summing up the values of each column, we find out that the ten most frequent bigrams at word initial position in Attic Greek account for 35.79% of all word beginnings. The ten most frequent bigrams at word endings account for 52.91% of all word ends, and the ten most frequent bigrams at word-final-plus-word-initial position for 36.43% of all word boundaries.[66]

64 Clarysse (1976), cf. Mayser-Schmoll (1970): 95–8, 108, Meisterhans (1900): 67, McLean (2002): 347.

65 If assimilation applied, sequences such as ων#, ην# etc. would become ωμ# or ωγ# etc. Some final sequences ending by μ or γ already occurred in the corpus (in elision forms). However, they are too scarce to affect the percentage calculated for the non-assimilated sequences.

66 These figures are not directly comparable with those given for Thai, since that study

Table 3 shows the results of the second test. The reading order for the table is columns first. The cells show the frequencies of letter combinations at word boundaries, resulting from the above formula. The frequency of κα, for instance, can be read at the intersection of column κ and row α and scores 0.886 = 88.6%. The higher the frequency of a combination, the more often it occurs at word boundary rather than in medial position. It is not possible, however, to determine how high the frequency must be for an experienced ancient reader to instinctively consider a bigram as a reliable cue for segmentation. Analogously, it is impossible to know how low a frequency must be in order to provide a cue *not* to segment a string. In Table 3, combinations scoring above 0.9 (90%) and below 0.1 (10%) are printed in bold. Combinations ranging between 0.8 and 0.9 or between 0.1 and 0.2 are printed in bold italics. Those ranging between 0.7 and 0.8 or between 0.2 and 0.3 are printed in italics, and those ranging between 0.6 and 0.7 or between 0.3 and 0.4 in plain black font. Combinations scoring between 0.6 (60%) and 0.4 (40%), the least likely to provide any cue, are printed in grey. Table 4 shows the combinations that would have a different score if assimilation applies both at word boundaries and internally in prepositional compounds. Sequences such as γβ, γδ, χϑ, χφ, and μπ are not included in the table. Since their non-assimilated counterparts, (κβ, κδ etc.), when internal, only occur in compounds, the score of the assimilated combinations would be exactly the same as that of the assimilated ones.[67] Assimilation of final -ν in polysyllabic words has been included in the computation, even though it was very unlikely to occur. Both tables show that several combinations *do* occur frequently or seldom enough to be regarded as reliable cues for or against segmentation.

Out of 420 phonetically possible combinations:

- 55 (13.1%) occur at or around word boundaries more than 90% of the time;
- 27 (6.43%) between 80% and 90%;
- 24 (5.71%) between 70% and 80%;
- 37 (8.81%) between 60% and 70%;

computed characters, not bigrams.

67 Cf. Lupaş (1972): 63. The question arises whether ancient readers perceived prepositional compounds as single units or isolated the initial prepositions.

Table 3: Frequency of letter combinations at word boundaries in Attic prose

	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	τ	υ	φ	χ	ψ	ω
α	**0.997**	0.307	0.659	0.367	***0.833***	0.419	**1.000**	*0.241*	0.428	***0.886***	0.484	0.365	0.621	***0.151***	*0.781*	*0.703*	***0.188***	0.555	0.559	0.607	0.416	0.459	**0.020**	**0.995**
β	***0.151***				0.397		0.482		0.534	***0.109***	**0.000**	**0.000**	**1.000**		*0.250*		**0.083**	0.520		0.616				0.652
γ	0.386		**0.000**		0.363		0.503		0.431	0.529	**0.000**		**1.000**		***0.148***		**0.026**	**0.963**		*0.286*				0.550
δ	0.655	**0.000**	**0.000**		0.432		0.577		0.617	0.648			*0.716*	**1.000**	0.567		0.598	**0.964**		0.395				***0.809***
ε	**0.994**	0.309	0.399	*0.748*	**0.924**	***0.124***	***0.837***	*0.245*	0.698	*0.205*	***0.148***	0.434	*0.750*	***0.152***	0.668	0.481	***0.187***	*0.780*	0.399	0.495	***0.178***	*0.211*	0.346	**0.981**
ζ	**0.026**				***0.185***		**1.000**		**0.059**				**1.000**		*0.741*		**1.000**	**1.000**		0.340				*0.222*
η	**0.988**	***0.160***	0.484	***0.822***	*0.763*	*0.702*	**1.000**	***0.167***	0.531	***0.168***	**0.088**	0.656	0.520	**0.080**	*0.219*	**0.073**	*0.233*	0.674	0.666	0.448	0.561	*0.204*	0.534	**0.971**
θ	0.632				0.334		**0.093**		0.375	***0.842***	**0.000**		*0.267*		*0.243*		**0.050**	***0.101***		***0.165***	*0.234*	**0.006**		**0.039**
ι	*0.762*	0.605	*0.291*	*0.757*	0.312	**0.000**	***0.861***	**0.074**	***0.849***	*0.263*	**0.055**	***0.195***	0.374	**0.035**	0.483	0.365	0.339	*0.295*	0.579	0.645	0.327	***0.182***	0.454	**0.935**
κ	0.410		**0.000**		***0.844***		0.401		0.509	***0.130***	**0.000**		**1.000**	**1.000**	0.405		0.396	***0.849***		*0.778*				0.404
λ	0.488	0.519	***0.850***		0.343		*0.298*	**0.000**	0.328	*0.255*	***0.108***		**1.000**	**1.000**	***0.104***	0.624	**1.000**	**0.975**	**0.077**	**0.093**	*0.778*	**0.031**		*0.270*
μ	0.496		**0.001**	**0.000**	0.445		0.486	**0.000**	0.561	*0.291*	**0.000**	**0.000**	**1.000**	**1.000**	*0.210*		*0.250*	***0.834***	*0.273*	0.306		**0.000**		***0.141***
ν	0.651		0.310	**0.000**	0.551		*0.758*	***0.137***	0.675	***0.183***		*0.275*	0.619	**1.000**	0.612	0.351	***0.193***	**0.999**	**0.000**	0.329	**0.000**	**0.000**		**0.942**
ξ	0.471		***0.133***		*0.766*		***0.820***		*0.704*		**0.000**		**1.000**		***0.169***		***0.104***	**0.996**		0.518				*0.244*
ο	**0.901**	0.473	**0.015**	0.372	0.383	**0.002**	**1.000**	***0.127***	*0.279*	***0.180***	***0.191***	***0.179***	0.428	**0.099**	0.677	0.582	**0.047**	0.685	0.640	*0.266*	*0.252*	**0.046**	**0.069**	**0.974**
π	***0.862***				***0.857***		**0.948**		***0.802***	0.362	**0.000**	**0.000**	**0.990**	**1.000**	0.566	**0.000**	***0.818***	***0.870***		***0.890***				0.338
ρ	0.472	*0.709*	0.363	***0.147***	***0.191***		*0.236*	*0.229*	**0.056**	0.332			**1.000**		*0.252*	**0.918**	**0.027**	**0.990**	0.305	**0.025**	0.557	***0.814***		**0.094**
σ	0.673				0.655		0.522		0.680	***0.828***	**0.000**		**0.985**	**1.000**	*0.709*		0.301	0.569		*0.714*				***0.817***
τ	0.319				0.551		0.481		***0.821***	0.542	**0.000**		0.461	**1.000**	0.489	**0.027**	0.543	0.598	**0.004**	**0.098**				***0.164***
υ	0.618	***0.169***	0.411	0.685	0.322	***0.167***	**0.924**	***0.151***	**0.998**	0.441	0.452	0.474	***0.880***	**0.979**	0.385	***0.858***	*0.219*	***0.885***	0.502	**1.000**	0.639	*0.218*	*0.750*	**1.000**
φ	0.474				0.677		*0.258*		*0.761*	*0.229*	**0.000**	**0.000**	**1.000**		***0.181***		0.633	***0.875***		*0.774*				0.683
χ	***0.128***		**0.000**		0.619		0.588		0.397	***0.800***	**0.000**		**1.000**		0.365		**0.036**	0.433		0.380				0.627
ψ	***0.140***				*0.249*		***0.102***		0.558			**0.004**	**1.000**		0.464		0.556	**1.000**		0.426				
ω	**0.968**	**0.089**	*0.282*	*0.247*	***0.134***	0.567	**1.000**	***0.145***	***0.188***	***0.150***	**0.050**	**0.011**	0.367	*0.792*	0.598	*0.254*	**0.074**	0.688	0.536	0.371	*0.270*	0.365	0.364	0.696

Table 4: Altered frequencies of letter combinations after assimilation

γγ	*0.790*
γκ	**0.908**
γλ	**0.914**
γμ	**0.054**
γν	0.315
γχ	*0.713*

μβ	0.567
μμ	*0.761*
μφ	0.486
μψ	*0.255*

κλ	*0.238*
κμ	**0.000**
κν	***0.138***

ν/__velar never occurs
ν/__labial never occurs

— 74 (17.62%) between 40% and 60%;
— 44 (10.48%) between 30% and 40%;
— 40 (9.52%) between 20% and 30%;
— 46 (10.95%) between 10% and 20%;
— 68 (16.29%) less than 10% of the time;
— 5 (λδ, λν, λψ, πφ, and ωυ)[68] never occur.

Summing up, 62% of the combinations occur either more than 70% or less than 30% of the time at word boundaries, and 81.29% more than 60% or less than 40%. If assimilation applies:

— some combinations that were strong cues *against* segmentation become strong cues *for* segmentation (γγ: from 0 to 79%, γκ: 0 to 90.8%, γχ: 0 to 71.3%, μμ: 0 to 76.1%), mitigate their status of cues against segmentation (μψ: 0.4% to 25.5%) or *de facto* lose their cue status (μβ: 0 to 56.7%, μφ: 0 to 48.6%);
— some combinations slightly increase their frequency at word boundaries (γλ +6.4%, γμ +5.3%, γν +0.5%);
— some unassimilated combinations slightly decrease their frequency at word boundaries (κλ -1.7%, κν -4.5%);
— some unassimilated combinations do not occur anymore at word boundaries (κμ), or disappear completely (ν followed by velars or labials).

Overall, only ten more combinations would fail to fall into the 0–30% and 70%–100% ranges. If sandhi assimilation applied consistently throughout the texts, 59% of the 420 phonetically possible combinations would still have more than 70% or less than 30% of their occurrences at word boundaries, thus being good candidates as segmentation cues. Even though we cannot verify this hypothesis experimentally, the tests show that it is plausible that letter combinations could guide experienced readers of Greek *scriptura continua*.[69]

[68] It must be borne in mind that non-Attic words (foreign personal names or toponyms) occur in the corpus. Moreover, entire passages have some dialectal colouring. This is the case, for instance, with Doric in the 'Melian dialogue' (Th. 5.84–116), Maurer (1995): 46–7.

[69] Cf. also Small (1997): 25.

Appendix 2. Linguistic dependencies in Classical Greek

In Chapters 4 and 5 syntactic structures are described in the framework of Mel'čuk's dependency theory. The purpose of this appendix is to provide a brief review of the key concepts in this theory and to raise some of the most immediate issues related to its application to Classical Greek. This appendix by no means covers all problems related to dependencies in Classical Greek. More comprehensive accounts (but perhaps less detailed with respect to some of the individual points examined here) are to be found in the guidelines for the syntactic annotation of digital corpora (treebanks), such as those of the *PROIEL* and the *Perseus* projects.[1]

The examples which support the discussion are mostly drawn both from the corpus studied in Chapter 5 and from the *Histories* of Herodotus. A few of the questions raised here remain open. These are more relevant for the theoretical discussion of dependencies in Greek than for explaining the descriptive framework I have adopted in this thesis. In some cases, I present some tentative suggestions which, however, are far from conclusive and are only to be taken as the initial step towards a more detailed and comprehensive study to be pursued in the future.

1. Types of dependency

In linguistics, saying that a word w_1 depends on a word w_2 means that the morphological form and the position of w_1 (*satellite*) in the linear order of the sentence are conditioned by w_2 (*governor*). Dependencies are always asymmetric: if w_1 depends on w_2, w_2 cannot depend on w_1. Each word admits one and only one governor and each sentence admits one and only one independent node. All the words in the sentence are connected to at least another one (*minimal phrase*) and none is left out of the dependency structure. Anaphoric relations (coreferentiality) are by no means to be considered a type of dependency.

Three types of dependency can be distinguished: *morphological* dependency, *semantic* dependency, and *syntactic* dependency.[2] Let us consider a Greek example:

1 Haug (2010) and Bamman et al. (2007) respectively.

2 Mel'čuk (2009), Mel'čuk-Polguère (2009).

(97) ἐν τῇ νῦν Ἑλλάδι καλεομένῃ χώρῃ (Hdt. 1.1)
'In the land now called Hellas'

From a semantic point of view, καλεομένῃ is a predicate and takes Ἑλλάδι and χώρῃ as arguments (the complement and the subject respectively). Therefore, Ἑλλάδι and χώρῃ can be said to depend on καλεομένῃ *semantically*. On the other hand, the fact that both καλεομένῃ and Ἑλλάδι are in the dative is determined by χώρῃ, which can be said to govern them *morphologically*. Morphological dependency does not imply syntactic dependency, as the following example clearly shows:

(98) διακελεύσομαι τοῖσι ἰοῦσι εἶναι ὡς προθυμοτάτοισι (Hdt. 1.36)
'I will exhort those who go to be as ready as possible'

Here, the dative is due to the lexicographic properties of διακελεύσομαι (it is required by its *government pattern*). Τοῖσι ἰοῦσι, however, is also the semantic (or *notional*) subject of the copula, whose predicate προθυμοτάτοισι is expressed in the dative in order to agree with ἰοῦσι. The semantic subject governs the predicate morphologically but not syntactically.

If we turn to *syntactic* dependency, different criteria come into play.[3] A word w_1 governs a word w_2 syntactically if the syntactic function of the phrase consisting of w_1 and w_2 is the same as that of w_1 alone: w_1 defines the *syntactic valence* of the entire phrase and can be called the *head of the phrase*.[4] The syntactic function of an English phrase like *'very good'*, for instance, is equivalent to that of *'good'* alone: the phrase can be linked to other elements in the sentence in the same way as *'good'* alone would. Therefore, '*good*' is the head of the phrase and governs *'very'*. Likewise, the syntactic links of a prepositional phrase like *'in Oxford'* are determined by the preposition, which therefore governs the noun. The syntactic function of the entire prepositional phrase at (97) corresponds to that of the preposition ἐν, which must be considered the head of the phrase. Moving down a level, the next element in the hierarchy is the noun χώρῃ, which is necessary for the article τῇ and the participle

3 Mel'čuk (2009): 27–33.

4 Cf. Kurzová (1988): 148.

καλεομένῃ to appear in the sentence.[5] Therefore χώρῃ is a direct satellite of ἐν and the governor of both the article and the participle. The latter, in turn, governs the adverb νῦν and the complement Ἑλλάδι and depends directly on χώρῃ. Sometimes, however, it is not possible to immediately determine which element defines the syntactic valence of a phrase.[6] Let us consider the following example:

(99) πόλιν προτείνων Ἄργος οὐ σμικρὸν φίλην ἐχθράν τε θέσθαι (E. *Heracl.* 21–2)
'Alleging that it is not a little thing to make the city of Argos a friend or an enemy'

Here, πόλιν and Ἄργος belong to the same noun phrase, one noun being an apposition to the other. The syntactic valence of the phrase does not depend on any of the two more than the other: the phrase only depends on θέσθαι and does not govern any other element. The infinitive can govern directly both πόλιν and Ἄργος, and it is impossible to determine which noun is the head and which is the apposition on these grounds. The complements, however, are expressed by feminine adjectives (φίλην ἐχθράν τε): their inflectional form is controlled by πόλιν, not by Ἄργος, a neuter noun. Therefore, it is πόλιν that must be considered the head of the noun phrase, with Ἄργος being its apposition. Other instances of appositional proper names are more difficult, especially when phrases lack morphological relations to words external to the phrase itself. Such is the case with the following example:

(100) καταπλώσαντας ἐπὶ Φᾶσιν ποταμόν (Hdt. 1.2)
'Sailing to the Phasis river'

Here, the participle governs the ἐπί (the prepositional phrase), but it is not clear whether ἐπί governs Φᾶσιν or ποταμόν. Both nouns can depend on the preposition (both ἐπὶ Φᾶσιν and ἐπὶ ποταμόν are grammatical phrases), and they do not determine one another's syntactic valence. In such cases the semantics of the phrase come into play. The proper name has the only function to point to a specific instance

5 Alternative theories regard the determiners as heads, see Mel'čuk (2009): 77–8 and Wood (2007): 167, with further references.

6 Cf. Haug (2010): 25.

of the category 'rivers': of all rivers, the Phasis is the one at hand (as opposed to saying that of all the things called Phasis, the river is the one at hand).[7] Therefore, one can argue that ποταμόν is semantically more central and must be considered the head of the phrase.[8]

Patterns consisting of participles which appear between the article and a proper name (that is, in attributive position) are not straightforward to analyse:

(101) τοὺς νόμους ὁ τιθεὶς τούτους Σόλων (D. 22.25)
'The giver of these laws, Solon'

The question is whether the participle is to be interpreted as an attribute of the proper name (*'these-laws-giving Solon'*) or as substantivized and in an appositional relation with the proper name (*'the giver of these laws, Solon'*, or *'Solon, the giver of these laws'*, cf. τὸν θέντα τὸν νόμον ἐξετάσαι Σόλωνα, D. 22.30). With plural proper names the former interpretation is often the more plausible, with the participle corresponding to a restrictive relative clause:

(102) οἱ τὰς νήσους ἔχοντες Ἴωνες (Hdt. 1.169)
'The Ionians who hold the islands', as opposed to the mainland Ionians. Cf. τῶν ἐν τῇ ἠπείρῳ οἰκημένων Ἑλλήνων (Hdt. 1.27), τοῖσι τὰς νήσους οἰκημένοισι Ἴωσι (Hdt. 1.27), τῶν παραμεινάντων Ἀθηναίων (Hdt. 1.64), τῶν ἀγαθοεργῶν καλεομένων Σπαρτιητέων (Hdt. 1.67), οἱ νῦν ὄντες ἐν αὐτῇ Ῥόδιοι (D. 15.14).

However, in the following sentence the latter interpretation seems preferable:

(103) τοὺς πρώτους ἀντιταξαμένους τῇ τῶν Ἑλλήνων ἐλευθερίᾳ Βοιωτοὺς καὶ Μακεδόνας καὶ Εὐβοέας (Hyp. 6.11)
'The first opposers of Greek freedom, the Boeotians, the Macedonians, and the Euboeans'

If we adopted an appositional interpretation for (101), we might wonder whether Σόλων is an apposition to ὁ τιθείς or the other way around. In English this seems to depend on the position of the common and proper nouns in the linear order of the

7 The three criteria presented are discussed by Mel'čuk (2009): 27–33.

8 Cf. Haug (2010): 25.

sentence. Proper names which follow common nouns are often interpreted in the literature as 'close appositions', that is, as appositions which restrict the meaning of the common noun (as in *'my brother John'*). Conversely, common nouns which follow proper names are interpreted as 'loose appositions', which correspond to non-restrictive relative clauses (as in *'John, my brother' = 'John, who is my brother'*).[9] At a quick glance, the situation seems similar in Classical Greek. The common nouns in phrases like Σόλων ἀνὴρ Ἀθηναῖος, Κροῖσος ὁ βασιλεύς, Σκυθέων τῶν νομάδων ἀνδρῶν, Κυαξάρης ὁ παῖς, or Μιτραδάτην τὸν βουκόλον (all from Hdt. 1.), Λεωσθένους τοῦ στρατηγοῦ (Hyp. 6.1), for instance, could all be interpreted as 'loose appositions'. Conversely, the proper names in phrases like τὴν θυγατέρα Εὐρώπην, ὁ βασιλεὺς Κροῖσος, τὸν παῖδα Δαρεῖον, τὴν θεὸν Μύλιττα (all from Hdt. 1), οὑμὸς πατὴρ Κέφαλος (Lys. 12.4), ὁ μὲν πρυτανεύσας ταῦτα καὶ πείσας Μαύσωλος (D. 15.3), Χερρονήσου τὴν μεγίστην ἔχει πόλιν Καρδίαν (D. 9.35), τὸν στρατηγὸν Λεωσθένη (Hyp. 6.3), and τὸν δὴ τοιαύτας καρτερίας ἀόκνως ὑπομεῖναι τοὺς πολίτας προτρεψάμενον Λεωσθένη (Hyp. 6.23) can be interpreted as 'close appositions'. In all such cases, the common noun (or the substantivized participle) already points to the right referent, which is explicitly identified by the proper name. However, if an ethnonym in the plural follows a common noun, it is not always easy to tell if that ethnonym is a noun, and an apposition, or an adjective:

(104) τοὺς δεσπότας Μήδους ἐδουλώσατο (Pl. *Mnx.* 239e 1)
'He enslaved the masters, the Medes' (*sc.* all of them)

(105) λαβόντες αὐτῶν τοὺς ἡγεμόνας Λακεδαιμονίους ἐν τῇ Σφαγίᾳ (Pl. *Mnx.* 242c 6–7)
'Having captured their leaders, the Lacedaemonians, in Sphagia', or 'their Spartan leaders', which seems more plausible since we are not dealing with *all* the Spartans?

Moreover, regular patterns with names of rivers, cities, and islands accompanied by ποταμός, πόλις, and νῆσος respectively are even harder to discern.[10] This problem

9 Heringa (2012), Burton-Roberts (1975).

10 Cooper, G. L. (2002) I: 419–24.

certainly deserves a much deeper study than these initial observations.

Further difficulties arise when the elements in a phrase belong to the same word class. Such is the case with substantivized adjectives or pronouns modified by an adjective. In the first book of the *Histories* of Herodotus, for instance, combinations of ἕτερος and τοιοῦτος or τοιόσδε occur three times:

(106) καὶ σοὶ ἕτερα τοιαῦτα παρακελευόμεθα (Hdt. 1.120)
'And we recommend to you other such things = to do so as well'

(107) ἐποίεε καὶ ὁ Κῦρος ἕτερα τοιαῦτα (Hdt. 1.191)
'Also Cyrus did other such things = dealt with it, too'

(108) ἄνθρωπος καὶ σὺ εἶς καὶ ἑτέρων τοιῶνδε ἄρχεις (Hdt. 1.207)
'You are a man, too, and you rule over others of this kind'

In these examples, it is not immediately clear whether τοιοῦτος or τοιόσδε are adjectives qualifying a substantivized adjective (with the phrase meaning '*such [other men/things]*') or ἕτερος is an adjective qualifying a pronoun (*'other [such men/things]'*). If we take the context into account, in (106) the idea of 'likeness' seems to prevail. The whole passage reads:

> καὶ νῦν εἰ φοβερόν τι ἐνωρῶμεν, πᾶν ἂν σοὶ προεφράζομεν. Νῦν δὲ ἀποσκήψαντος τοῦ ἐνυπνίου ἐς φαῦλον, αὐτοί τε θαρσέομεν καὶ σοὶ ἕτερα τοιαῦτα παρακελευόμεθα. (Hdt. 1.120)
> 'And now, if we saw any danger we would announce everything to you beforehand. But now, since the dream has been shown by examination to have a petty meaning, we ourselves are confident, and we recommend you to be so as well'

If ἕτερα were omitted, the same meaning would still be conveyed, which would not have been the case if τοιαῦτα had been missing. Therefore, τοιαῦτα points to a referent (*'such things'*) that is modified by ἕτερα, and it can be regarded as the head of the phrase. The same applies to (107), where the idea of likeness with the deeds of the Babylonian queen is stressed: ἀπικόμενος δὲ ἐπὶ τὴν λίμνην, τά περ ἡ τῶν

Βαβυλωνίων βασίλεια ἐποίησε κατά τε τὸν ποταμὸν καὶ κατὰ τὴν λίμνην, ἐποίεε καὶ ὁ Κῦρος ἕτερα τοιαῦτα. Conversely, it is quite evident, even without taking the context into account, that in (108) the prevailing idea is that of 'otherness'; that is, the referent *'others'* is modified by τοιῶνδε. Similar problems arise with indefinite phrases like οὐδέν ἄλλο. This phrase can be understood as consisting of a pronoun modified by an adjective (corresponding to English *'nothing else'*) or as an adjective modifying a substantivized adjective (*'no other thing'*).[11] When these two adjectives modify a noun, ἄλλος normally seems to be semantically more central, as the following phrase shows:

(109) οὐδέν ἄλλο πόλισμα (Hdt. 1.143 and 178)
'No other city'

Here, ἄλλο is a descriptive adjective which directly modifies πόλισμα and defines the category *'other cities'*, whereas οὐδέν modifies the entire phrase in a restrictive way (that is, selecting an item—a 'null' item in this case—out of a category):[12] οὐδέν [ἄλλο πόλισμα] means '*no element of the category* OTHER CITIES'. Should the opposite analysis be adopted (ἄλλο [οὐδέν πόλισμα]), the phrase would mean '*another element of the category* NO CITIES', which is semantically problematic.[13] On these grounds, one could claim that ἄλλο is a substantivized adjective governing οὔδεν. However, in some languages where the difference between indefinite pronouns and adjectives is morphologically marked, equivalent phrases consist of an indefinite pronoun (*'nothing'*) modified by an adjective (*'else'*). Such is the case with Latin (*nihil aliud)* and German (*nichts anderes*), for instance. The indefinite is only used as an adjective when it modifies a noun, as in (109) (cf. Lat. *nullum aliud tempus*, Ger. *kein anderes Buch*) and the adjective can never be substantivized (as it were, Ger. ***kein Anderes*). It might be questionable whether tackling this question in a typological perspective

11 In the former English example, the function of *'else'* is predicative, whereas in the second *'no'* is an attribute. On the difficulty of deciding between attributive and predicative use in Greek in the absence of the article see Bergson (1960): 63–4.

12 See Devine-Stephens (1999): 27 for the distinction between restrictive and descriptive adjectives.

13 Cf. Mel'čuk (2009): 94–5.

is a valid approach; if it is, a much more comprehensive study would be necessary. Both of these issues are beyond the scope and the purposes of this thesis.

2. Complex sentences

As I mentioned above, every sentence both admits and requires one and only one independent node, which can be called the *head of the sentence* or the *top node* of the dependency structure and is normally occupied by the main verb. This also applies to subordinate clauses. Since the verb of a subordinate clause still governs all of its arguments and adjuncts,[14] it naturally occupies the top node of the clause. Conjunctions, if present, determine the syntactic valence of the entire clause and, as a consequence, they govern the verb of the subordinate clause. Conversely, the head of an accusative and infinitive clause is always the infinitive and that of a genitive absolute is the participle, which depends directly on the superordinate verb.

2.1 Verbless clauses[15]

Across languages two major types of verbless clauses can be distinguished. In the first type, the copula is simply optional, and 'minimal pairs' where it does or does not appear can be considered equivalent (as in δῆλον ὅτι / δῆλόν ἐστιν ὅτι). These clauses are called *zero-verb clauses*. On the contrary, true *nominal clauses* never admit a verb and are *not equivalent* to analogous clauses where the verb shows. Some scholars have tried to argue for this distinction in Classical Greek, claiming that there are verbless clauses whose semantics would change if a verb was restored; in particular, alleged Greek nominal clauses have been claimed to be 'timeless'.[16] In languages where the distinction between zero-verb and nominal clauses is clearly visible, however, the presence or absence of the verb is clearly regulated by the grammar.[17] No such thing can be observed in Classical Greek. Moreover, cross-linguistic analysis has revealed that 'timelessness' in zero-verb clauses is not due to the absence

14 Mel'čuk (2009): 45.

15 This paragraph repeats the discussion presented at 6.3.

16 A (numerically) minor type is exclamations, see Humbert (1960): 68.

17 Such is the case with Russian and Turkish, for instance. See Mel'čuk (2009): 45–7, Stassen (1997): 76–91.

of the copula.[18] As a consequence, all Greek verbless clauses must be regarded as instances of zero encoding of the predicate.[19] If the omitted verb is not the copula but is a different verb which must be inferred from the preceding clause, zero-verb clauses are *elliptical*.[20] The head of a verbless clause is always its predicate.

2.2 Relative clauses

Relative clauses are modifiers of their antecedents[21] and, from a syntactic point of view, they depend on them. The top node of a relative clause is always its verb, which can be implied. Verbs of relative clauses are considered to be directly dependent on the antecedent and to govern the relative pronoun: the thematic role and syntactic function of the pronoun depend on the verb, and only its gender and number depend on the antecedent.[22] In Classical Greek, the antecedent is not always expressed. In some cases the antecedent is part of a prepositional phrase and so is the relative pronoun. The prepositions might be the same, in which case the entire prepositional phrase the antecedent is part of can be omitted:

(110) ἀπικόμενοι <u>ἐς τὰ</u> ἀπεπέμφθησαν (Hdt. 1.53)
'Having arrived where they had been sent to'

In such cases the prepositional phrase depends on the verb of the relative clause which, in turn, depends on the superordinate verb.

It might also happen that the relative pronoun is 'attracted' into the prepositional phrase of which its antecedent is part:

(111) Κυαξάρης μέν, βασιλεύσας τεσσεράκοντα ἔτεα <u>σὺν τοῖσι</u> Σκύθαι ἦρξαν, τελευτᾷ (Hdt. 1.107)
'Cyaxares, having reigned for forty years, including those when the Scythians ruled, died'

18 Cf. Stassen (1997): 75.

19 Stassen (1997): 109–13, Guiraud (1962): 9–10.

20 Devine-Stephens (1999): 79. Cf. Guiraud (1962): 10. Elliptical clauses are instances of *asymmetric parataxis*, see Nir-Berman (2010): 750.

21 Bakker, S. (2009): 267–9.

22 Mel'čuk (1988): 25–6.

The prepositional phrase to which the relative pronoun belongs (σὺν τοῖσι) can be interpreted as equivalent to an expression like σὺν αὐτοῖσι ἅ. The time adjunct modifying ἦρξαν should be expressed by an accusative of duration, but a demonstrative antecedent is implied and τοῖσι is attracted into the case required by the preposition. The entire phrase introduced by σὺν modifies τεσσεράκοντα, not ἦρξαν. Relative clauses introduced by idiomatic expressions like ἐς ὅ, ἐς οὗ, and ἄχρι/μέχρι οὗ often show the same phenomenon:

(112) ὁ Δηιόκης ἦν πολλὸς ὑπὸ παντὸς ἀνδρὸς καὶ προβαλλόμενος καὶ αἰνεόμενος, ἐς ὃ τοῦτον καταινέουσι βασιλέα σφίσι εἶναι (Hdt. 1.98)
'Deioces was all being put forward and praised by all men, up to the point that they agreed that he should be their king'

Here, ἐς denotes an extension of time and can only depend on the main verb. The relative clause requires the expression of the 'time at which' instead. Just like in the previous example, the prepositional phrase must be understood as an elliptical expression with attraction: ἐς ὃ corresponds to ἐς τοῦτο οὗ. The attraction is not apparent in ἄχρι/μέχρι οὗ, since these preposition would normally require the genitive, and it simply does not apply in ἐς οὗ; εἰς cannot govern genitives anyway.

2.3 Coordination

Coordination is to be considered a type of dependency, especially when the coordinate structures are not reversible: *'he went and saw'* is not equivalent to *'he saw and went'*.[23] Coordinating conjunctions depend on the coordinate element that precedes them and govern the one which follows. Let us analyse a Greek phrase:

(113) τὰ μὲν ὑπὸ τοῦ ψυχροῦ τε καὶ ὑγροῦ πιεζόμενα (Hdt. 1.142)
'On the one hand affected by the cold and wet'

The first coordinate element, ψυχροῦ, depends on ὑπό. Leaving τε aside, for the time being, we can say that καί depends on ψυχροῦ and governs ὑγροῦ. Coordinating

[23] The coordinating conjunctions are not used in a purely logical meaning (as in '*you and I*'), see Mel'čuk (1988): 26–7, Mel'čuk (2009): 32, 50, 80–1.

conjunctions are not always necessary. Asyndetic coordination can be understood as a zero-conjunction structure with each coordinate element depending on the previous one.[24]

2.4 Parentheses

Parentheses, that is centre-embedded independent clauses, are by definition syntactically unrelated to their host (matrix) sentence, although sometimes they seem to be functionally related to one of its elements.[25] On the other hand, they are hierarchically subordinate to the matrix clause, with which they stand in an endotactic relationship.[26] Endotaxis is normally included in dependency-based syntactic descriptions, but its representations vary.[27]

2.5 Multiple dependencies

Let us consider the following examples:

(114) ὁ Δηιόκης ἦν πολλὸς ὑπὸ παντὸς ἀνδρὸς καὶ προβαλλόμενος καὶ αἰνεόμενος (Hdt. 1.98)
'Deioces was all being put forward and praised by all men'

(115) καὶ τούτων μὲν τοὺς πλεῦνας Κυαξάρης τε καὶ Μῆδοι ξεινίσαντες καὶ καταμεθύσαντες κατεφόνευσαν (Hdt. 1.106)
'And Cyaxares and the Medes killed most of them, having entertained them and made them drunk'

(116) εἶδόν τε ἐς πόλιν ἐλθὼν καὶ ἤκουσα τὸ μήτε ἰδεῖν ὄφελον μήτε κοτὲ γενέσθαι ἐς δεσπότας τοὺς ἡμετέρους (Hdt. 1.111)
'And I saw, as I went to the city, and heard what is neither good to have seen nor to ever have happened to our sovereigns'

24 Mel'čuk (2009): 42. Denniston regards coordinating conjunctions as particles, see Denniston (1954): xliii–l, Duhoux (2006): 521.

25 Hoffman (1998), Schneider (2007), Devine-Stephens (1994): 423, and Ashdowne (2002): 154.

26 Nir-Berman (2010): 751.

27 For instance, Haug (2010): 6–7 represents both the main clause and the parentheses as dependent on the 'sentence root'.

(117) ἐν δὲ τούτῳ τά τε αἰπόλια καὶ τὰς ποίμνας καὶ τὰ βουκόλια ὁ Κῦρος πάντα τοῦ πατρὸς συναλίσας ἐς τὠυτὸ ἔθυσε καὶ παρεσκεύαζε ὡς δεξόμενος τὸν Περσέων στρατόν (Hdt. 1.126)
'Meanwhile Cyrus, having gathered there all the goats and sheep and oxen of his father in one place, slaughtered and prepared them, in order to receive the Persian army'

(118) οἷαι χαλεπώταται καὶ βαρύταται (Pl. *Ap.* 23a 1–2)
'Such [as are] most painful and grievous'

In (114) the prepositional phrase ὑπὸ παντὸς ἀνδρὸς expresses the agent of both passive participles. In (115) the group constituted by Κυαξάρης and Μῆδοι is the subject of κατεφόνευσαν. Likewise, the participles refer to the entire group, not just to Μῆδοι. Had a singular noun replaced Μῆδοι, both the participles and the verb would still go in the plural. Occasionally, elements depend on two coordinate main verbs. The relative clause in (116), for instance, depends on both εἶδον and ἤκουσα. In (117) the accusatives αἰπόλια, ποίμνας, and βουκόλια are all objects of the transitive verbs συναλίσας, ἔθυσε, and παρεσκεύαζε (which can only be used absolutely in the middle voice). In (118) οἷαι modifies the group of adjectives consisting of χαλεπώταται and βαρύταται.

Now, by definition each word admits one and only one governor. However, in order to describe the structure of these sentences it seems necessary to violate this axiom. One solution might consist of multiplying the dependent elements (by adding zero-form elements to the description) in order to make them match the number of governors and to assign each governor a distinct satellite. A different, less intrusive solution consists of resorting to *grouping* the governors together into a single node in the dependency structure.[28] This, however, is only viable when the governors are coordinate (as are the participles in 114 and ἔθυσε and παρεσκεύαζε in 117).[29]

[28] Mel'čuk (1988):28–33, Mel'čuk (2009): 92–4.

[29] Haug (2010): 69–80 introduces the concept of 'slashes', or secondary dependencies. However, the *PROIEL* corpora also use slashes to encode semantic or morphological relations, such as those between a direct object and a complement, and anaphoric (coreferential) relations, which have nothing to do with syntactic dependency.

Compound numerals are an interesting word class. Just as in French or in German, Classical Greek simple numerals can be built into compound numerals through polysyndetic coordination: Fr. *vingt-et-un*, Ger. *ein-und-zwanzig*, Gr. εἷς καὶ εἴκοσι. Across languages, it is uncertain whether such forms should still be analysed as phrases or as fully lexicalized forms. Since coordination is a form of dependency, it should be possible to distinguish a governor and a satellite, each being a simple numeral. As a matter of fact, when *vingt-et-un* or εἷς καὶ εἴκοσι modify a noun, it is the numeral for '1' (*un*, εἷς) that agrees with the noun.[30] As a consequence, *un* and εἷς should be regarded as heads of the respective phrases. Conversely, German *ein-und-zwanzig* is invariable. If we consider the corresponding ordinal numeral, it is only *zwanzig* 'twenty' that takes the ordinal form: *einundzwanzigster* 'twenty-first' (as opposed to ***ersterundzwanzigster* 'first-and-twentieth'). On these grounds, one might either claim, as Mel'čuk does,[31] that the numeral of which the form changes is the head of the phrase, or that the compound, once lexicalized, is put into the ordinal form as a whole (as seems to be the case with French *vingt-et-unième*, as opposed to ***vingt-et-premier*). If Mel'čuk is right, then it seems possible to extend this conclusion to the cardinal *ein-und-zwanzig* and claim that *zwanzig* is the head of the compound. Compound numerals whose constituent elements are invariable also exist in Classical Greek (for instance, ὀκτὼ καί εἴκοσι, and the like). In such cases, however, a criterion devised on the grounds of the corresponding ordinal numeral cannot be applied since both elements appear as ordinals (ὄγδοος καὶ εἰκοστός). Moreover, Greek compound numerals may contain more than one variable numeral, as, for instance, with πεντακόσιοι καὶ χίλιοι or in the following example:

(119) τεσσεράκοντα καὶ πεντακόσια καὶ εἰνακισχίλια τάλαντα (Hdt. 3.95)
'9540 talents'

Cases like this make Mel'čuk's criteria inapplicable. Moreover, on a theoretical level, the absence of an agreement marker (as is the case with indeclinable numeral

30 E.g. μίαν καὶ εἴκοσι ναῦς, Th. 8.9.

31 Mel'čuk (2009): 32–3.

adjectives) does not correspond to the absence of agreement altogether:[32] invariable numbers still govern the element they modify morphologically, behaving as *agreement controllers* (they determine their morphological number-agreement marker).[33] On these grounds, it might be preferable to simply apply the dependency chain principle, according to which preceding elements govern the subsequent ones in coordination.

2.6 Double articulation

According to Brunel, attributive adjectives with repetition of the article, as in τὸν κήρυκα τὸν Σπαρτιήτην (Hdt. 1.153), must be connected to the article preceding them.[34] From a syntactic point of view, this would mean that the adjective is substantivized and stands in appositional relation with the noun (the phrase can be analysed as *[the herald, [the Spartan one]]*). However, several studies[35] have shown that this interpretation is not always correct and almost never possible with undetermined nouns followed by an articulated modifier. In such cases the adjective and both articles must all be regarded as dependent on the noun.

2.7 Vocatives and interjections

Interjections may constitute predicates of their own right,[36] and the same is true of vocatives which, of course, can occur in isolation. Vocatives with or without an interjection also occur within sentences and may or may not be co-referential to other elements in the sentence, usually those referring to the second person.[37] This has nothing to do with their place in the syntactic structure of the sentence, and several scholars have remarked that vocatives are essentially extrasentential.[38] The function of the vocative case, address, is related to discourse: unlike all other cases, it

32 The inflectional form of the numeral could be understood as a zero morpheme, cf. Mel'čuk (2006): 469–92.
33 Corbett (2006): 42–4, 131.
34 Brunel (1964): 56–95.
35 Cf. Plank (2002a), Bakker, S. (2006), and Bakker, S. (2009).
36 Conti et al. (2006): 18, Perdicoyianni-Paléologue (2002): 55.
37 Ashdowne (2002): 147–50, Vairel (1981): 442–3.
38 Ashdowne (2002): 153, Vairel (1981): 438, Fink (1972): 62–3 ,with further references.

is used to mark speech-act level adjuncts.[39] The function of vocatives is often compared to that of parentheticals,[40] in that it matches that of particles or speech-act adverbs and adverbial clauses. In terms of dependency syntax, vocatives stand in an *adjunctive* dependency relation to the top node of the host sentence.[41] Interjections serve the same function as vocatives,[42] apart from ὦ, which only occurs in combination with the vocative, often providing it with specific connotations.[43]

2.8 Attachment ambiguities

From a merely syntactic point of view, prepositional phrases in Classical Greek can either depend directly on a verb or modify a noun phrase:

(120) κατὰ δὲ τὸν κατὰ Κροῖσον χρόνον καὶ τὴν Ἀναξανδρίδεώ τε καὶ Ἀρίστωνος βασιληίην ἐν Λακεδαίμονι ἤδη οἱ Σπαρτιῆται κατυπέρτεροι τῷ πολέμῳ ἐγεγόνεσαν (Hdt. 1.67)
'But in the the time of the reign of Croesus and of the kingship of Anaxandrides and Ariston in Lacedaemon, the Spartans had come to prevail in the war'

(121) ὕδωρ ἀπὸ τοῦ Χοάσπεω ποταμοῦ ἅμα ἄγεται (Hdt. 1.188)
'Water from the river Choaspes is carried along'

In (120) ἐν Λακεδαίμονι is unmistakably modifying βασιληίην.[44] However, the example at (121) is slightly more ambiguous, in that the prepositional phrase might either depend on the verb or on the noun.

Other ambiguities involve predicative adjectives and the copula:

39 Vairel (1981): 439–40, 444–5. This has led ancient grammarians and modern scholars to question the position of the vocative in the case-system, see Fink (1972) and Vairel (1981).

40 Ashdowne (2002): 153–8. Haug (2010): 10–11 treats them in the same way.

41 Mel'čuk (2009): 55.

42 In Latin, for instance, combinations of interjections and vocatives have been lexicalized as interjections, cf. Ashdowne (2002): 149.

43 See Perdicoyianni-Paléologue (2002): 75–81 for a detailed survey of such connotations.

44 Bakker, S. (2009): 34–5.

(122) Περίανδρον […] ἐόντα Θρασυβούλου […] ξεῖνον ἐς τὰ μάλιστα (Hdt. 1.20)
'Periander, who was very close to Thrasybulus because of bonds of hospitality'

Here, ἐς τὰ μάλιστα could modify either ἐόντα or ξεῖνον. In other words, we could interpret this phrase as meaning *'being [extremely bound by hospitality]'* or as *'[being bound by hospitality] to the maximum degree'.*

2.9 Accusative and infinitive

Certain verbs govern both an accusative and an infinitive as two distinct arguments. The accusative is often the notional subject of the infinitive,[45] but such constructions should not be mistaken for real object clauses. This is clearly shown by the behaviour of πείθω, as Rijksbaron has pointed out:[46]

(123) πείθουσι ἑωυτοὺς βασιλεύεσθαι (Hdt. 1.97)
'They convince themselves to be ruled by a king'

The reflexive pronoun is not necessary for the semantics of βασιλεύεσθαι but is an argument of πείθουσι. In the following sentence, instead, πείθω governs both an accusative of the person and an accusative and infinitive:

(124) πείθει τὸν ἄνδρα ταῦτα ἔχειν οὕτω (Hdt. 4.154)
'He convinces the man that these things are so'

The same reasoning applies to κελεύω (which also appears with no overt arguments, as in κελεύσαντες ἐπὶ τὰ ὅπλα, X. *HG* 2.3.20). This shows more clearly with its compound διακελεύομαι, as in sentence (98), where the addressee of the command is expressed with the dative (τοῖσι ἰοῦσι). In general, verbs which require a *dynamic* (as opposed to *declarative*) infinitive as an obligatory constituent govern the accusative of the person independently from the infinitive itself.[47] These include κωλύω, ἐάω (and other verbs of preventing or permitting, such as ἴσχω, ἐρύκω, εἴργω, ἀπαγορεύω,

45 Cf. Jiménez López (2006): 170–1.
46 Rijksbaron (2002): 99–102, cf. Jiménez López (2006).
47 Dynamic infinitives are those which express a potential state of affairs, whereas declarative infinitives state an actual state of affairs, see Rijksbaron (2002): 97–8.

and the like), αἰτιάομαι, διδάσκω, ἀναγκάζω, ἀξιόω, and δέομαι, which governs the genitive of the person. As the language evolved, from Hellenistic *koine* onwards, the infinitives in such constructions (especially those with verbs of commanding) started being replaced by final clauses introduced by ἵνα[48] (for instance, δεόμενος τοῦ Ὑπατίου, ἵνα εὔχηται ὑπὲρ αὐτοῦ, Callinicus [5th cen. AD], *Vita sancti Hypatii* 44.22).

3. Minor problems

3.1 οἷός τε

This idiomatic phrase, which accompanies an infinitive, is used to express ability (*'in such a state as to'*). The connective particle τε lacks a real coordinating function. Originally, it had a digressive value, which is commonly the case after relative words in the epic language already. The expressions containing τε in this function are in most cases fixed (compare ὅσον τε, *'about'* with numerals), and their lexicalization is sometimes mirrored by orthography (ὥστε, ἅτε). Οἷός τε falls into this category.[49] According to Monteil, in a sentence like οὐ γάρ τοί σέ γε τοῖον ἐγείνατο πότνια μήτηρ οἷόν τε ῥυτῆρα βιοῦ τ' ἔμεναι καὶ ὀϊστῶν (*Od.* 21.172–3), the expression introduced by οἷός τε can be interpreted as *'belonging to the same category as* (οἷόν τε) *being drawer of bow and arrows'*.[50] This is an instance of a zero-copula relative clause, with the infinitive as the subject and the relative adjective as the predicate. The relative clause can also be considered elliptical, with the infinitive expressing purpose:[51] *'belonging to the same category as [others are born belonging to which] in order to be drawers of bow and arrows'*. Such verbless constructions are analogous to those which gave origin to infinitival clauses introduced by ὥστε (where the particle τε has the same function).[52] Whatever interpretation is correct, the relative adjective would always be the predicate regardless of the type of verbless clause and of the function of the infinitive. Subsequently, οἷος can be regarded as the head of the relative clause and

48 Horrocks (1997): 99. See Hult (1990): 167, 172, 199, 203, 226.

49 Ruijgh (1971): 4–5.

50 Monteil (1963): 195.

51 Cf. Ruijgh (1971): 541.

52 Cf. Ruijgh (1971): 539–41, 606–9 (cf. 223–4 for the definition of the infinitive as "une espèce d'adverbe").

depends on its antecedent, τοῖον which, like most correlatives, need not be expressed.[53] Semantics and the generalized lack of an antecedent make it easy to consider the construction of οἷός τε with the infinitive as corresponding to that of adjectives such as ἀγαθός, ἱκανός, δυνατός, and the like.[54] Such constructions might actually have promoted the construction of οἷός τε with the infinitive[55] but are not syntactically equivalent to it: when governed by these adjectives, the infinitive can be regarded as expressing purpose[56] or, more plausibly, to behave as an accusative of respect.[57] Instead, the construction of οἷος (without τε) and the infinitive expressing natural disposition (instead of ability)[58] is only attested from the 4th century and calls for a different explanation starting from reduced relative clauses.[59] Οἷος without τε and the infinitive also occurs in fifth-century texts and still conveys the idea of ability. In all such cases, however, it is introduced by a correlative and probably originated from finite verb relative clauses, with the infinitive being due to analogy with the construction of οἷός τε.[60]

3.2 ἐφ' ᾧ τε

This phrase (*'on condition that'*) is sometimes anticipated by a correlative (ἐπὶ τούτῳ, ἐπὶ τῷδε, ἐπὶ τούτοισι). This is particularly common in epigraphic Greek.[61] The antecedent need not be expressed:

(125) πρὸς μούνους γὰρ τούτους ὅρκιον Κῦρος ἐποιήσατο ἐπ' οἵσί περ ὁ Λυδὸς (Hdt. 1.141)

'Only with these did Cyrus make a treaty on the same conditions as the Lydian'

53 Burguière (1960): 82.
54 Monteil (1963): 195, Kühner–Blass–Gerth (1890–1904) 2/I: 9.
55 Ruijgh (1971): 541.
56 So, for example, Smyth (1956): §§2001–2.
57 Compare ταῦτα ἀγαθὸς ἕκαστος ἡμῶν ἅπερ σοφός, ἃ δὲ ἀμαθής, ταῦτα δὲ κακός (Pl. *La.* 194d), for instance.
58 Cf. Ruijgh (1971): 48–9, 524–46, in particular 543, Rijksbaron (2002): 66.
59 Ruijgh (1971): 543–4.
60 Monteil (1963): 197.
61 Monteil (1963): 121, Hermann (1912): 60–6.

In the oldest attestations, the verb of the relative clause is an indicative future.[62] The infinitive started appearing later, probably due to the influence of result clauses introduced by ὡς. Analogously, the presence of digressive τε is probably due to the influence of ὥστε.[63] At some point, the infinitive should have been reanalysed as the verb of the relative clause and as the governor of the prepositional phrase which includes the relative pronoun. As a consequence, the infinitive can be regarded as directly dependent on the superordinate verb.[64]

3.3 οὐ φημί

(126) ὅταν μὲν μὴ φῇ τὴν βουλὴν αἰτεῖν, κτλ. (D. 22.10)
'When he should deny that the Council demanded, etc.'

The negative modifies αἰτεῖν (*'when he says that the jury did not ask'*, transl. A. T. Murray) but appears right before the superordinate verb φῇ, as if to mean *'when he should not say that, etc.'*. This construction of a negative with φημί is quite common in prose (cf. for instance Antipho 4.3.1, Pl. *Grg.* 457d and 481e, *Lg.* 663b and 936e, *Chrm.* 158d, *Sph.* 249a, *Tht.* 161e, Arist. *Metaph.* 1030b, Isoc. 17.23). The same pattern is also found with φάσκω (Isoc. 17.15). With λέγω, instead, the negative tends to normally modify the element it immediately precedes. In general, it appears that when φημί is modified by a negative it rather means *'to deny'* than *'not to say'*,[65] for which forms of λέγω would be preferred. The expected reverse order is found when the expression means *'to say that not'*, that is, when an assertion is being made, as opposed to denial or reticence (see for instance Pl. *R.* 419a, cf. D. *Contra Phormionem* 33, ind. 2sg.: ὁπότε … φῂς μὴ τὰ χρήματα ἐνθέσται εἰς τὴν ναῦν, ἀλλὰ τὸ χρυσίον τῷ ναυκλήρῳ ἀποδοῦναι, with an opposition between χρήματα and χρυσίον).

62 Hermann (1912): 324.

63 Ruijgh (1971): 48, Monteil (1963): 122 with further references.

64 Ruijgh (1971): 46–8. Conjunctions derived from relative pronouns (ὡς, ὥστε, ἅτε) should be treated in the same way, but cf. the remarks of Monteil (1963): 76–9.

65 See Wackernagel (1928): 262–3 and Moorhouse (1959): 121–3 for a discussion of possible explanations of this behaviour. Wackernagel draws a parallel with French expressions such as *'Il ne faut pas que tu meures'*. Something similar can also be noticed in English, as shown by question tags in sentences like *'I don't think he is good, is he?'*.

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