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Introduction

Aristarchus of Samothrace was supposed to die in obscurity. When Ptolemy VIII exiled Aristarchus and his contemporary scholars from Alexandria, his goal was to eliminate their cultural impact in order to bolster his own. Ptolemy may have cut Aristarchus' legacy short, preventing Aristarchus from conducting more scholarship as the superintendant of the Library of Alexandria, but he by no means eliminated it. Instead, the literary-critical tradition that Aristarchus started influenced scholars well into the Middle Ages. The *semeia*, or critical signs, invented by Aristarchus still hold cultural relevance today, as Aristarchus invented the asterisk. This thesis aims to explore the forms in which the literary-critical tradition survived, allowing it to outlast its creator by centuries. While it is not an exhaustive account of the works of scholars influenced by Aristarchus, and through whom the tradition carried on, the thesis examines the works of Aristonicus of Alexandria, Dionysius Thrax, and George Choiroboskos, and their respective influence on the scholiast of the Venetus A manuscript of the *Iliad*. Although the manuscript's composition in the tenth century C.E. places the Venetus A scholiast at a twelve century separation from Aristarchus, this paper aims to show, through close readings and topic models of the scholia, that the Venetus A scholiast shares many literary-critical interests with notable proponents of the Aristarchan tradition.

A considerable amount of scholarship has been done on the Venetus A manuscript. However, instead of relying mainly on secondary scholarship to inform me about the manuscript, I utilized the Homer Multitext Project's recently-published digital edition of

the manuscript itself. Excited by what information a primary source could yield, I opted to use several more - namely, Dionysius Thrax's *Τέχνη Γραμματική* and its accompanying scholia, the one remaining page of Aristonicus' *περὶ τῶν σημείων τῆς Ἰλιάδος καὶ Ὀδυσσείας*, and the *Suda*, a tenth century encyclopedia of the ancient Mediterranean. Just because the internet had granted me unprecedented access to primary sources, however, did not mean that I completely neglected secondary scholarship. Francesca Schironi's *The Best of the Grammarians: Aristarchus of Samothrace on the Iliad* was a major influence on this thesis, as was [that one article on topic modeling that I can't actually find].

The thesis itself consists of four chapters, each covering a different aspect that will lead to the overall understanding of the Aristarchan tradition. The first chapter explains the evolution of the Aristarchan tradition through the texts left behind by Dionysius Thrax, Aristonicus, and George Choiroboskos. The second provides a translation of the first section of Dionysius' *Τέχνη Γραμματική*, and explains the division of Aristarchan literary-critical concerns into three major categories. Through close readings of the scholia, the third chapter demonstrates that the literary-critical concerns of the Venetus A scholiast fall into these same three categories. Lastly, the fourth chapter provides a broader view of the scholia, demonstrating how topic modeling can be used to analyse the scholia in ways that were not possible previously.

Additionally, this thesis includes several visual aids to better illustrate my findings. Section A of the appendices includes two tables of verbal adjectives, the creation and significance of which are covered in Chapter 2. Section B of the appendices consists of several topic models, which present the findings discussed in Chapter 3. While Chapter 3 provides a verbal explanation of the features of these topic models that I found to be the most noteworthy, topic models are intrinsically a visual mode of communication, and no written explanation of the models could be nearly as effective as showing them directly. Lastly, Section C of the appendices contains the newest diplomatic edition and translation of *περὶ τῶν σημείων τῆς Ἰλιάδος καὶ Ὀδυσσείας* by Aristonicus of Alexandria. Co-authored by Professor Neel Smith from the College of the Holy Cross, Professor Graeme Bird from Gordon College, and myself, this edition and translation aim to be as true as possible to words of Aristonicus as they are preserved in the Venetus A. I have included this as part of the appendices as primary sources - including our new edition of *περὶ τῶν σημείων*, provided much of the information used for this thesis.

People

If this thesis aims to establish what literary-critical interests the Venetus A scholiast shares with foundational members of the Aristarchan tradition, it must first define who those members are, and what interests they had. The following will by no means be an exhaustive account of scholars who followed Aristarchus and all of their works; instead, I will provide an introduction to a few proponents of the Aristarchan tradition whose contributions were significant, and who were substantially connected to either Aristarchus himself or his works. This allows us to get as close as possible to the source of the tradition without looking at the works of Aristarchus himself. Admittedly, looking at the eight hundred-some works that Aristarchus reportedly wrote would be the ideal method, but as none of those

works survive today, we can only learn about Aristarchus' methodology through the works of those around him.

The creation of the Aristarchan literary-critical tradition is intrinsically tied to the creation of the critical edition during the 3rd century BCE. Zenodotus of Ephesus, the first superintendant of the Library of Alexandria, took it upon himself to determine which lines of the *Iliad* and *Odyssey* were genuinely "Homeric". Zenodotus was under the impression that these epic poems had been composed perfectly by a single author, and that later scribes had corrupted the story by adding spurious lines. Consequently, he set out to edit lines which he deemed to be fake out of the text, thereby creating the first critical edition of a text.

Aristarchus of Samothrace

Aristarchus of Samothrace (216-144 BCE) succeeded Zenodotus as the superintendent of the Library of Alexandria. During his tenure, Aristarchus took it upon himself to expand upon and revise Zenodotus' fledgling field of Homeric criticism, seemingly because he disagreed with so much of it. When writing editions of the Homeric epics, Zenodotus had used one *σημεῖον* (critical sign), called the obelos, to mark lines which he though were un-Homeric. Along with adopting the obelos, Aristarchus also created more *σημεῖα* so that he could easily indicate more concepts. Among these were the *ἀστερίσκος*, *σίγμα*, and *ἀντίσιγμα*. Now, instead of merely indicating which lines were un-Homeric, the *σημεῖα* could also point out misplaced and duplicate lines. While Zenodotus had started the field of Homeric literary criticism, Aristarchus added necessary components in order to make it more applicable and exact.

The *Suda*, a 10th century document which provides a biography of Aristarchus, claims that Aristarchus "λέγεται δὲ γράψαι ὑπὲρ ω′ βιβλία ὑπομνημάτων μόνων." Unfortunately, this figure of eight hundred books cannot be verified, as none of Aristarchus' works are extant today. Thus, when seeking to understand the Aristarchan tradition, modern scholars can never piece it together from Aristarchus' own words. We can, however, use the words of a man who was close to him.

Dionysius Thrax

Dionysius Thrax (170-90 BCE) was a student of Aristarchus who went on to become one of the best-remembered grammarians of his time. His work *Τέχνη γραμματική* outlines his views on the newly-developing field of literary criticism, and provides a list of what a scholar must understand about a text before creating his own critical edition. When studying the Aristarchan literary-critical tradition, Dionysius Thrax is a key figure for three reasons. The first reason, of course, is that he studied under Aristarchus. As the field was so new, his views were undoubtedly influenced greatly by those of his teacher, and understanding how Dionysius viewed literary criticism provides insight into how Aristarchus probably viewed it. The second reason is simply that his work survived. This may seem obvious, but since so many texts relevant to the Aristarchan literary-critical tradition no longer exist, scholars hoping to understand Aristarchus' methodology must capitalize on any available primary source. The third reason is that *Τέχνη γραμματική* became the quintessential

Greek text in post-Classical Europe. Long after Aristarchus' 800 books had blinked out existence, *Τέχνη γραμματική* was the text which introduced many scholars to the Aristarchan tradition well into the Middle Ages. Therefore, it seems likely that a tenth century scholiast, such as the man behind the Venetus A manuscript, would have gained at least some of his knowledge of Aristarcus' legacy through the lens of Dionysius.

Aristonicus of Alexandria

During the Augustan Age, Aristonicus of Alexandria created another crucial text in understanding the Aristarchan tradition. His work *Περὶ τῶν σημείων τῶν τῆς Ἰλιάδος καὶ Ὀδυσσείας* commented on the works of Aristarchus and explained the functions of his critical signs. The scholiast of the Venetus A manuscript included a transcription of *Περὶ τῶν σημείων* in the beginning of his manuscript, confirming that Aristonicus' was still being read and replicated by scholars as of the tenth century CE. However, while *Περὶ τῶν σημείων* may have influenced the scholiast's view of Aristarchus, it cannot have the same impact on modern scholars. While the Venetus A was being re-bound, all but one of the pages of *Περὶ τῶν σημείων* disappeared. The only surviving page in the Venetus A eventually became the only surviving page in general, as no other copies of *Περὶ τῶν σημείων*, or any of Aristonicus' other scholarship, are known to exist today.

George Choiroboskos

Not much is known about the life of George Choiroboskos. In fact, his life could have taken place any time from the fifth through the ninth centuries CE. What is know, however, is that he wrote commentaries on the works of many important scholars, including Dionysius Thrax. While the commentary on Dionysius does not still exist in its entirety, some of what Choiroboskos said about Dionysius Thrax lives on through the scholia in manuscripts of *Τέχνη γραμματική*. As is the case with Aristonicus, what modern scholars can learn from Choiroboskos is limited; but the Venetus A scholiast, living within a few centuries of him, could have learned much more from him.

Dionysius Thrax

As mentioned in the previous chapter, the *Τέχνη Γραμματική* of Dionysius Thrax was instrumental in preserving the legacy of Aristarchus. Much of this is due to the first section of the text, fittingly titled *Γραμματική*. Whereas the remainder of the text explains a variety of grammatical fundamentals, ranging from vowels and consonants to parts of speech, *Γραμματική* outlines the six components of making a critical edition, which had only been undertaken by Zenodotus and Aristarchus so far. According to Dionysius, the six components of literary-criticism are as follows:

"First, practiced oral reading with regard to prosody

Second, explanation in accordance with the poetic figures

Third, accounting for words and background information

Fourth, discovery of etymologies

Fifth, setting out paradigms

Sixth, *krisis* of the poems, which is the most beautiful aspect of the art"

While the order of the list is not arbitrary, the hopeful author of a critical edition did not necessarily have to be perform these tasks in precisely the order given. Instead, the list can be broken down into three steps - Practiced Oral Reading, Scholarly Work, and Krisis - wherein components within the same step can be performed in any order.

Step One: Practiced Oral Reading

The first step of creating a critical edition only includes the first of Dionysius' six components. Before any work can be done in terms of understanding the poem, a scholar must first internalize every line, down to the breathings and pauses, and be able to recite them. The idea behind this is that anything "truly Homeric" would be perfect. If the words did not flow, or if the meter did not fit, a line could be assumed to be uh-Homeric. However, that judgement could not be made until the line was recited confidently and committed to memory. After all, if a scholar was not positive that his reading of the line was correct, then the fault for a line that did not flow properly may have been his, as opposed to the author's.

In the second section of *Τέχνη Γραμματική*, Dionysius breaks practiced oral reading down into three subcategories: delivery, prosody, and pauses. Delivery and pauses are more or less self-explanatory. Prosody, however, is a more ambiguous term, referring to the rhythmic patterns found in poetry. According to scholia found in manuscripts of *Τέχνη Γραμματική*, George Choiroboskos broke prosody into three subcategories, and then attributed these subcategories to Dionysius. These subcategories are tone, length, and breathing.

Step Two: Scholarly Work

The second step encompasses components two, three, four, and five from Dionysius' list. These components all contribute to making sure everything in the future critical edition is accurate, and therefore Homeric. While the step of scholarly work informs the subsequent step of krisis, it can also work backwards to inform the practiced oral reading. By setting out a paradigm or discovering an etymology, the understanding of a word's pronunciation may change, and a line which was once dubious may be vindicated. This is why scholarly work is the intermediate step. It comes after the scholar has a decent grasp of the text, but before any lines have been athetized, so that an informed decision on each line can eventually been made.

Step Three: Krisis

Dionysius' last remaining component, *krisis*, must be performed as a step of its own. *Krisis* is the ancient Greek word for "judgement," and in this context refers to discerning whether a line is Homeric enough to be included in the critical edition. If a line was proven in the previous step to have coherent grammar, and not to be nonsensical or out-of-character, then it would be judged as truly Homeric and added to the addition. The lines containing mistakes would still be copied over into the critical edition, but would be marked with an

obelos, as an indicator that readers should reject them. Aristonicus would later liken these obelized lines to dead bodies, lifeless but not physically gone. Dionysius did not phrase it quite as harshly, perhaps because obelization was not viewed as a death sentence by his teacher; indeed, Aristarchus had argued against Zenodotus' obelization of many lines, effectively bringing the lines back to life. While the step of krisis might be the harshest step, Dionysius also believed it to be the most beautiful, as trimming away the imperfect lines could allegedly reveal the truly Homeric text. # Verbal adjectives in the *scholia*

Introduction to the Verbal Adjective

When studying the literary-critical interests of a scholiast, it only makes sense to do a close reading of the scholia he wrote. However, as the Venetus A manuscript houses 14,336 scholia, I could not hope to read and analyze and sort all of them as just one part of a one-year project. If I wanted to accomplish anything, I first had to select a group of scholia to focus on - the question was, which group of scholia would yield meaningful results?

The idea to analyze scholia containing verbal adjectives stemmed from their conspicuous abundance. Verbal adjectives - words ending in -*τέον* - appear very infrequently in the larger Greek corpus. The Venetus A scholiast, however, employed an impressive 78 verbal adjectives in his scholia. Only two of these verbal adjectives - *φυλακτεον* and - are used in the context of what characters of the *Iliad* must do in the story. The remaining 76 verbal adjectives are used to instruct readers on how they should interpret the text. This ratio of 2:76 demonstrates that when talking about a subject other than his literary-critical interests, the scholiast does not use verbal adjectives noticeably more frequently than any other writer; when talking about his literary-critical interests, however, he uses them far more frequently. Furthermore, these 78 different verbal adjectives are employed in over 800 of the Venetus A scholia. As verbal adjectives have a special literary-critical significance to the Venetus A scholiast, there seemed to be no better group of scholia to examine than those containing verbal adjectives.

Momentarily, it seemed that I had isolated the perfect group of scholia to focus on. Then, of course, it registered that 800 scholia is a large amount of scholia. While I could have sifted through these scholia at random, hoping to stumble across something of meaning, I figured that there must have been a more organized and effective way. Overwhelmed by the sheer amount of material I was dealing with, and groping for any semblance of a direction, I attempted to sort the verbal adjectives into the same "steps" as I had used to categorize Dionysius' components of literary criticism.

To my surprise, it worked.

Practiced Oral Reading

The first category, as in the previous chapter, covers the topic of *ἀνάγνωσις*. In the scholiast's case, we must keep in mind that the words have to do both with the pronunciation itself, and with the orthographic conventions that would lead to a certain pronunciation. Consider the following scholion:

ὑποστικτεον εις το εθελεις , ινα το δαημεναι αντι προστακτικου το δαηθι (Commenting on *Iliad* 6.150)

The scholion tells the scribe that one must write a comma after the word *εθελεις*. Clearly, this is an action which must take place before the oral reading takes place. It still appears in the Oral Reading category, however, as a scribe must include the comma to ensure that his readers recite the line correctly, pausing in the appropriate place.

Two of Dionysius' subcategories of ἀνάγνωσις, prosody and pauses, also make an appearance in the Venetus A scholia via the verbal adjectives. The example above, commenting on *Iliad* 6.150, confirms that the placement of pauses is a literary critical interest that the scholiast shares with Dionysius Thrax. In terms of prosody, the scholiast covers tone, length, and breathing, just as George Choiroboskos claimed that Dionysius did. Consider the following scholion:

την ος οξυτονητεον δια την οι αντωνυμιαν . ητις νυν εγκλητικη εστιν (Commenting on *Iliad* 6.90)

The scholion instructs that one must pronounce the pronoun oxytone, falling squarely into the tone category of George Choiroboskos' subdivision of prosody. This scholion is also interesting to consider as it operates in the obverse manner of the one discussed above. In the scholion commenting on 6.150, how one must mark the text is explicit, and how one must pronounce it is implicit; on the scholion commenting on 6.90, the pronunciation is made explicit, and the orthography is implicit.

Scholarly Work

Like Dionysius advises, the scholiast gives explanations in accordance with the poetic figures, accounts for words and background information, records his discoveries of etymologies, and sets out paradigms. As scholarly work is the intermediary step, used to inform both the practiced oral reading and the krisis, recording his work in these regards helped to justify his critical choices to readers, in addition to contributing to the construction of the critical edition itself.

The following scholion speaks to Dionysius' second component, explaining a poetic figure:

ἴστεον ὅτι ὁ ποιητὴς πανταχοῦ τὸ ὁμοΐιον ἐπι τοῦ φαύλου λαμβάνει οἶον ὡς ἐνταῦθα ἀλλά σε γήρας τειρει ὁμοΐιον . καὶ ἀλλ ἤτοι θάνατον μὲν ὁμοΐιον οὐδὲ θεοί περ ἦμι φίλω· ἀνδρὶ δύνανται ἀλαλκέμεν ὁπότ ἂν τελος ἔλθη ὁμοΐιον πτολέμοιο· (Commenting on Iliad 4.315)

Here, the figure in question is the word *ομοΐιον*. The scholiast argues that in true Homeric language, *ομοΐιον* can only be used negatively. He then provides examples, proving that this is a reccurring feature of the language. This is not yet a judgement of whether a line is Homeric, but it is clear how it could become one. It logically follows that any line using *ομοΐιον* positively should be judged unworthy of being in the text, whereas any line using *ομοΐιον* negatively should not be counted out quite yet.

The scholion featured below includes both judgement and a scholarly argument, with the verbal adjective being used to express the latter:

ἔχθιστος δ' Ἀχιλῆϊ . ὅτι Ζηνοδοτος τοῦτον καὶ τοὺς μετ αυτὸν τρεῖς ἠθέτηκεν προς ὑπόθεσιν δέ τινα λέγονται επίτηδες γὰρ τούτων τῶν αγαθῶν ἐπεσβόλον παραγείοχεν : ἰστέον δὲ ὅτι Ἀχιλλεὺς αὐτον ἀναιρεῖ ὡς ἱστορεῖ Κόϊντος ὁ ποιητὴς ἐν τοῖς μεθ Ὅμηρον φησὶ γὰρ ὅτι ἐν τῇ Ἀμαζονομαχια ἀνελὼν ὁ Ἀχιλλεὺς Πενθεσίλειαν τὴν τῶν Ἀμαζόνων βασίλισσαν ὕστερον προσχὼν τὸ σῶμα αὐτης εὐπρεπὲς πάνυ εἰς ἔρωτα ἦλθεν τῆς προειρημενης βαρέως τὲ ἔφερεν ἐπι τῷ θανάτῳ αὐτῆς : ὁρῶν δὲ δυσφοροῦντα αὐτὸν Θερσίτης συνήθως ἐλοιδόρει . ἐφ ᾧ ὀργισθεις ὁ ἥρως γρονθω παίσας αὐτὸν ἀναιρεῖ παραυτὰ τῶν οδοντῶν αὐτοῦ ἐνεχθεντων χαμαί (Commenting on Iliad 2.220)

This scholarly argument corresponds with Dionysius' third component, accounting for background information. In the passage in question, Achilles hurls insults at a soldier named Thersides. The judgement that must be made is whether it is in character for Achilles, as one of the heroes, to verbally abuse one of his inferiors in this way. To answer this question, the scholiast confirms that according to the poet Quintus, this is not the worst thing Achilles has inflicted upon this particular soldier. In fact, in Quintus' poem Τα Μετα Ὅμερον, Thersides mocks Achilles for falling in love with Penthesileia, the Queen of the Amazons, only after murdering her. Achilles, enraged, kills Thersides with a single punch, knocking all of his teeth out in the process. The scholiast includes this backstory in order to confirm that it is not out of character for Achilles to act aggressively towards Thersides, and ultimately to justify why he did not obelize thisf line.

The following scholion covers the final two of Dionysius' categories contained in scholarly work, the discovery of etymologies and setting out of paradigms:

Δασυντέον, τὸ γὰρ α προ τοῦ δ ὂν καὶ μὴ ἔχον στερητικὴν ἔννοιαν ἢ κρᾶσιν τινὰ δασύνεσθαι θέλει , στερητικὴν μὲν οὕτως . κατα κράσιν ἀδαής , ἀδρανής ἀδευκής , μὴ ουτ δὲ ἔχον ἁδρός ἀδινός Ἀδριας δι ὃ καὶ τὸ Ἄδωνις κρεῖττον ἐστι δασύνειν ἵνα καὶ παρα τῷ αἴδειν τῇ δαίμονι ἐτυμολογηθ (Commenting on Iliad 11.88)

The paradigm here is contained in the first line. The scholiast explains that in words where α comes before the δ, but does not have a negative sense or krasis, the breathing on the α tends to be rough. He then provides ἁδρός, ἀδινός, and Ἀδριας as examples of words that fit into the paradigm, and ἀδαής and ἀδρανής as examples of words that do not. The scholiast then mentions that according to the paradigm he just set up, the name Ἄδωνις should have a rough breathing, as he traces the etymology of the name to the phrase "*αἴδειν τῇ δαίμονι*". This is one of the scholia which works backwards to work forwards, confirming the practiced oral reading in order to eventually confirm that a line should be judged Homeric. In order to justify his pronunciation and marking of the text, the scholiast had to first establish a paradigm and demonstrate why a word should be pronounced the way he indicated. Those words which may not obviously fit into a paradigm, or with a significant or obscure root, may require an etymology to justify their use.

Krisis

Lastly, once the scholarly work is complete, the scholiast arrives at the most beautiful facet of the grammatical art. The verbal adjectives in the krisis category refer to words which explicitly state that a judgement must be made on a line's authenticity. For example, consider this scholion:

ὅτι ὡς προς δύο τοῖς δυϊκοῖς σχήμασι χρῆται δι ὃ ἀθετητέον τὸν προκείμενον στίχον ἐν ᾧ τεσσαρά ἐστιν ὀνόματα (Commenting on Iliad 8.191)

In the passage which it comments on, the poet lists four characters, and then refers to them with the dual form. This is obviously grammatically impossible, leading the scholiast to assert that one must athetize the line in which the four names are listed.

Table A

Oral Reading	Scholarly Work	Krisis
ἐκτατέον	θετέον	συντακτέον
οξυτονητέον	νομιστέον	
ὀξυντέον	ἐκδεκτέον	
παροξυντέον	ποιητέον	
προπερισπαστέον	συναπτέον	
προπαροξυτομητέον	ἀρκτέον	προσύπακούστέον
προσπνευστέον	ληπτέον	προσεκληπτέον
προενεκτέον check	μεταληπτέον	
στηκτέον	πιστέον	ὑπακουστέον
συσταλτέον	πιστευτέον	ὑποληπτέον
ὑποστικτέον	λεκτέον	ἐκδεκτέον
βαρυτονητέον	ἰστέον	
ψιλωτέον	θετέον	
ἐγκλιτέον	ακουστέον check	προοιστέον
ἀναστρεπτέον	αριθμητέον	προσδοτέον
δασυντέον	διαιρετέον	συναπτέον
δίασταλτέον	δυσωπητέον	διορθοτέον
ὀρθονητέον	παραληπτέον	
περισπαστέον	παραφυλακτέον	ἀνενεκτέον
ὀρθονητέον	προσληπτέον	
	προσαπτέον	σημειωτέον
	προσεκτέον	ἀθετητέον
	προσθετέον	
	συντακτέον	γραπτέον
	χωριστέον	λεκτέον
	ῥητέον	
	διαιρετέον	
	ἀποδοτέον	
	δεκτέον	
	νοητέον	
	ποιητέον	
	ἀναγνωτέον	
	ἀποδοτέονvη	
	προοιστέον	
	τηρητέον	
	παρατηρητέον	

Oral Reading	Scholarly Work	Krisis
	συγκαταθετέον	
	επιζητητέον	
	ἀτενιστέον	
	ὑπαντητέον	
	παραιτητέον	

Table B

Tone	Length	Breathing	Pauses
οξυτονητέον	ἐκτατέον	ψιλωτέον	δίασταλτέον
ὀξυντέον	συσταλτέον	δασυντέον	ὑποστικτέον
παροξυντέον	ἐγκλιτέον	προσπνευστέον	στηκτέον
περισπαστέον	προενεκτέον		
προπερισπαστέον			
προπαροξυτομητέον			
βαρυτονητέον			
ἐγκλιτέον			
ἀναστρεπτέον			
ὀρθονητέον			

Topic modeling

Introduction to Topic Modeling

While close reading of scholia is an integral facet of my research, as evidenced by the Verbal Adjective chapter, it does not need to be the only component. In prior decades, this would not be the case: research of scholia was limited to transcriptions and close readings, fit within the short span of time that a scholar could occupy space in a manuscript library. However, due to the recent digitization of the Venetus A manuscript, I can take advantage of a process called topic modeling and analyse scholia in a way other than close reading.

Topic modeling is a form of natural language processing which forms a statistical model of the "topics" which occur in any given corpus. A computer forms these "topics" by grouping the units (in this case, words) which co-occur the most frequently. This process is known as text-mining, and allows scholars to discover recurring semantic structures throughout the corpus which would not otherwise be readily recognizeable. Additionally, the use of topic modeling allows me to make observations about the entire corpus of scholia in the Venetus A manuscript without doing a close reading of all 14,336 of them. While this task would almost certainly yield interesting results, it simply was not a feasible goal for one component of a year-long project.

Another advantage of topic modeling is that it yields empirical results. Anyone who wants to replicate or build off of the findings in this paper can use the lists of words included

with this thesis, as well as the stop words list, in order to get their own results. The stop words list is a collection of words which the computer is ordered to ignore when making its statistical models. For instance, articles and particles will appear evenly throughout the text regardless of context; for this reason, they are not important to include in the topic models, and thus are placed on the stop words list and filtered out. The different lists of words, meanwhile, display the different stages of topic modeling explored in this thesis.

Creating a Topic Model

Generating a topic model requires two documents: the first is the corpus that is being modeled, and the second is the "stop words" list. The first document is self-explanatory. Using the digital edition of the Venetus A manuscript created by the Homer Multitext project, a list of every scholion was assembled. Accents and breathing marks were omitted from this list, as the scribe was not always consistent in marking the same words the same way. Therefore, keeping the accents and breathing marks would have caused unneeded repetition in our topic models.

The stop words list, meanwhile, is a list which tells the topic modeling software which words to filter out. Certain words, such as articles and particles, appear so frequently that including them in the topic models would have shown nothing useful. Furthermore, these words would co-occur so frequently that they would form their own topic, providing no potential insight and taking up space that could have been used for a more meaningful topic. A common place to start in generating a stop words list is to add the words which appear the most frequently. That is, however, only the starting point; certain terms, such as the name Aristarchus, are both frequently-occurring and meaningful, and should be taken off of the stop words list. While it is obvious whether most words would add meaning to a topic model, certain words require experimentation. For instance, the word παρα occurs frequently, and is used to attribute a work to a certain author. Though this usage seemed like it might yield interesting results, topic models containing the word παρα proved that it occurred too frequently to add anything meaningful to the models, and it was added to the stop words list.

Topic Model A, which is included in the appendix section of this thesis, was constructed using every scholion in the Venetus A. When I set out to topic model the scholia, I knew that this had to be done. After all, there are few ways to comprehensively analyse every scholion. However, by swapping out the list of scholia and stop words list, I could adjust my scope and find patterns in more specific groups of scholia.

Topic Modeling With Critical Signs

Given the opportunity to broaden and narrow my scope as I pleased, I decided to analyze the intersection between two indicators of literary-critical interests: the verbal adjectives discussed in the previous chapter, and the critical signs invented by Aristarchus and Zenodotus. In order to create these topic models, I created separate lists of scholia with corresponding lines marked marked with diples, dotted diples, asteriskoi, or obeloi, which also contained verbal adjectives. (There are no scholia which contain a verbal adjective and are marked with an antisigma, a dotted antisigma, or a reverse dotted antisigma.) This way,

I could see whether specific critical signs was more likely to correspond with any of the aforementioned categories of verbal adjectives.

Of these topic models, I found it most telling to the "key" verbal adjectives of each category. In Topic Model B, which shows scholia corresponding with a diple, διασταλτεον appears in the ten "key" words in seven out of fifteen topics. Στικτεον, γραπτεον, ακουστεον, παραιτητεον, περισπαστεον, προπερισπαστεον, ιστεον, αναγνωστεον, and εκληπτεον all appear in the key words of these fifteen topics as well. Notably, these words mainly fall into the Marking and Pronouncing category and the Scholarly Argument category of verbal adjectives. After finding this, I wondered if the other critical signs followed this pattern. I hypothesized that the obelos in particular would have more verbal adjectives from the Editorial Vocabulary category, as the obelos is used to show when a line has been judged un-Homeric.

The dotted diple topic model, Topic Model C, followed the same pattern as the Topic Model B, with διασταλτεον, ακουστεον, ρητεον, συσταλτεον, προπερισπαστεον, and προενεκτεον all showing up as key terms. Surprisingly to me, the obelos topic model, Topic Model D, did as well. The key words in the topics of the obelos-marked scholia include οξυτονητεον, περισπαστεον, στικτεον, μεταληπτεον, αναστρεπτεον, διασταλτεον, θετεον, ψιλωτεον, and γραπτεον. However, outside of the verbal adjectives, the obelos topic model was markedly different from the others. It was the only model to include forms of αθετεω (specifically, αθετειται and αθετουνται) as key words. It also included the word αστερισκοι as a key word, inherently connecting the obelos and asteriskos categories. This makes sense, as according to Aristonicus, the asteriskos is used to denote correctly-placed lines that are placed wrongly - and thus, are marked with an obelos - elsewhere in the text. Topic Model C, the asteriskos topic model, however, does not include οβελοι as a key term, making this relationship seem rather one-sided.

The frequent correspondence between critical signs and verbal adjectives in the scholarly argument category, as opposed to the krisis category, makes sense. After all, if a line is athetized, having a scholion to explain that it must be athetized is redundant; having a scholion to explain *why* it must be athetized, however, is far more useful to the reader. Based on the last chapter's close reading of the scholion on line 8.191, lines with both critical signs and corresponding scholia talking about krisis do exist. However, as is demonstrated by the topic models, these are not nearly as common as lines with critical signs and corresponding scholia showing scholarly work.

Conclusion

Through close readings of the scholia and topic modeling, I identified many literary-critical interests shared between the Venetus A scholiast and the earlier followers of the Aristarchan tradition. Specifically, both Dionysius Thrax and the Venetus A scholiast instructed their readers in terms of anagnosis, scholarly arguments, and krisis. In terms of anagnosis, while the Venetus A scholiast did not touch upon delivery, he mirrors Dionysius in terms of his discussion of prosody and pauses. Additionally, when talking about prosody, the Venetus A scholiast covered tone, length, and breathing, which are

the facets which George Choiroboskos alleged would have mattered to Dionysius Thrax. Given that they shared so many literary-critical interests, I believe that the scholiast of the Venetus A took much inspiration from the followers of Aristarchus in terms of his own methodology. I cannot say for certain whether the scholiast had access to the Techne Grammatike itself, or the works of someone commenting on the Techne Grammatike, but the overlap in interests displayed by these scholars, centuries apart, is too significant to be a coincidence.

Topic modeling allowed us to confirm what we had learned through close readings, as it allowed us to take every scholion throughout the Venetus A into account. The striking amount of "scholarly argument" topics, whether centering around backstories or grammar, reinforced our findings that the scholiast focused on many of the same topics as the early followers of Aristarchus. After all, Dionysius Thrax dedicated four of his six components of literary criticism to the construction of scholarly arguments; it was cleary very important to him, and based upon our topic models, we can conclude that this same step was exceedingly important to the scholiast as well.

One of the most important facets of our findings is that they are empirical and, to an extent, replicable. While not every topic model will be identical by nature of the software, any future scholar could check our findings by using the same list of words and stopwords list, and generating similar topic models to analyze. This is important because it is a relatively new phenomenon in Classics, and especially in studying manuscripts. For centuries, the study of manuscripts has been limited to believing the obervations of a few select scholars, who had days or merely hours with the manuscripts to collect their findings. To create something replicable, which anyone can access and replicate, was only made possible through the rise of digital humanities. Thus, while this is the conclusion of my thesis, I firmly do not believe that it is the conclusion of this research. I hope, and expect, that others will pick up where I left off, capitalizing on updated editions of the manuscript and new analytical software to build off of the findings contained in this thesis.