A Parametric Study of Classical and Late Latin

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Abstract

This project applies the Parametric Comparison Method to Classical and Late Latin texts to evaluate the parametric development of Latin syntax from the 1st to the 6th century AD. Evidence is found of syntactic development between the 1st and 4th century texts in two subdomains: adnominal Genitives and adjectives. The Classical Uniform Genitive (GUN) is found to be reduced in later Latin. In Classical Latin, the inflectionally marked genitive was permitted to occur in virtually any phrasal position. This is documented in Petronius' *Satyricon*. By the 4th century, in an informal narrative text, Egeria's *Peregrinatio*, this seemed to have been reduced to an inflectionally marked Genitive confined to a single structural position raised over by the noun – a phenomenon which was not found in 1st century Latin. A trace of GUN was once again identified in the *Regula Sancti Benedicti* from the 6th century. The role of the preposition *de* is also seen to undergo some change and begins to take on a weak genitive role in the latter text. The occurrence of both a weak Uniform Genitive and a weakly prepositional genitive suggests competing grammars in the 6th century author. A significant shift in the behaviour of adjectives was observed from the 1st to the 4th century, whereby the surface distributional flexibility of adjectives was reduced as compared to Classical Latin: whereas Classical Latin permitted adjectives to modify all kinds of nouns both pre- and post-nominally, there is no evidence of so-called Manner 2 adjectives occurring prenominally in Late Latin. These findings show a gradual shift towards adjectives and genitives more similar to Romance between the 1st and 6th centuries. It was found that some of the changes that would eventually lead to Romance syntax began in Latin and that some Romance features emerged in some dialects/idiolects of Late Latin.

Author's declaration

I declare that this thesis is a presentation of original work, and I am the sole author. This work has not previously been presented for a degree or other qualification at this University or elsewhere. All sources are acknowledged as references.

Contents

(1) Introduction

The use of syntax as a tool for determining historical relatedness has been much debated. Some scholars such as Harrison (2017) argue for its total ineffectiveness and others including Lightfoot (1980) and Haspelmath (2014) advise caution. Although there were brief periods of interest in historical syntax in the early and mid-20th century the field did not take off until Chomsky's Principles and Parameters model (1981) provided a suitable unit of syntactic comparanda: the parameter. More recently, Longobardi and Guardiano (2009) argued that syntax is just as informative for our understanding of ancient languages and linguistic change as traditional lexical approaches. They also argued that syntax is just as useful for historical comparison. From here the study of syntax as evidence for historical relatedness has continued to expand; however, there is still a paucity of research into historical syntax compared to historical phonology.

Expanding on ideas proposed in Longobardi and Guardiano (2009) and Longobardi et al (2013), Crisma et al (2020) presented the most updated parameter setting algorithm. The algorithm is a necessary tool for data collection. Comparative analysis of this data is completed by computational analysis which allows for cross-linguistic historical comparison of parameter strings. Inspiration for this method was taken from methods in historical phonology and previous attempts to create a comparative model for historical syntax. The idea of large-scale comparison of minimal pairs is utilised in the PCM, but syntactic parameters are compared rather than phonemes. Crisma et al presented a set of 94 syntactic parameters, essentially abstract rules that may be present "+" or absent "-" in any given language. Each syntactic parameter describes one variable property of the internal grammar which may generate various surface phenomena. The system follows an implicational structure meaning that in addition to "+" and "-" parameters may also be considered null "0" if presupposed by the setting of some previous parameter. The aggregate of these parameters in any given language may be compared to the parameters of another language. This may also be used to calculate the quantitative relatedness of any two languages.

So far, the PCM has only been used to analyse living languages by asking native speakers for grammatical judgements based on the guidance laid out in Crisma et al. (2020, Supp. Mat.). Since Latin does not have any native speakers, I have attempted to set the parameters in three Latin texts written from the 1st to the 6th century AD. As such, this project serves as a means of determining the efficiency of the Parametric Comparison Method as a tool for ancient language analysis.

Latin seemed the natural choice for this project as there is a comparatively large corpus of Latin texts on which to base parametric analysis. Although there are also many surviving Ancient Greek texts there is more scope to track the development of Latin into its daughter languages as there are so many. Whereas the only descendent of Ancient Greek is Modern Greek.

Furthermore, the syntax of Latin nominals is particularly interesting, as it is heavily affected by the implicational structure of grammatical properties: in natural languages many grammatical features trigger other grammatical features - this creates a complex system of parameter implications. Some parameters only exist because they are required by other parameters, for example the numerous parameters presupposing definiteness are null in Latin owing to its lack of definiteness. Consequently, Latin contains many null parameters which do not add to our understanding of the language, although many of them have become relevant in the successive development of the modern Romance languages.

This project aims to determine the diachronic development of Latin syntax from its Classical roots to modern Romance. More specifically, to identify whether any of the differences between Latin and Romance began to emerge in Latin itself. This manifests in the form of three research questions listed below.

1. What is the set of parameter values in Classical Latin and in Late Latin?
2. How did Latin syntax develop from the Classical to Late period?
3. Did parameters in Latin already show signs of the resetting which would eventually lead to Romance syntax?

I was able to complete a full parametric analysis of Petronius' *Satyricon* from the 1st century and *Peregrinatio Egeriae* from the 4th century. However, there was insufficient data to complete the analysis for the 6th century text: *The Rule of St. Benedict.* I was able to set some parameters which dealt with the Genitive in this text and so only the Genitive is discussed with reference to 6th century Latin. Despite being unable to produce a parametric map of *The Rule of St. Benedict* this text provided key insight into the development of Genitives throughout Latin and showed evidence of an early form of the Romance *di/de* Genitive. Aside from Genitives, the other significant difference between the texts from Classical and Late Latin was the variability of adjectival position. It was found that some of the more salient differences between modern Romance and Latin began during the Late period of Latin and are evidenced in *Peregrinatio Egeriae.*

Working with textual data alone has its limitations. Since written language tends to be more conservative, we can expect a delay between the development of a novel feature in the spoken language and its realisation in text. This is mitigated by choosing texts that are particularly colloquial and/or have a large proportion of reported speech in the hope that these provide a closer approximation to the spoken language at the time of writing. i.e., the more colloquial a text the more likely it is to reflect the author's mental grammar.

Perhaps, the more impactful limitation is the number of texts analysed. As I am focusing on only one text per period it is more difficult to draw conclusions about the state of the language as it is difficult to determine whether any given change is a reflection of the broader language or a quirk of the author's style. To mitigate this, I have taken into consideration data from other Latin texts and examined my texts in the broader literary context. This additional information helps to differentiate changing syntax from stylistic choices.

Following this introduction section 2 discusses the theoretical background i.e. the history of historical comparison and the role of syntax within that. As well as the study of Latin in Historical Linguistics and the type of information that can be obtained from textual data. Section 2.5.3 also presents a brief overview of Latin grammar. The following methodology in section 3 details how the parameters were set from texts and the results, section 4, lays out the key findings of this analysis. Section 5, the discussion, expands on the results providing details of the underlying phenomena that give rise to changing parameters. It also discusses the process of parameter resetting and the possibility of competing grammars in *St Benedict's Rule.* In the discussion the parametric make up of Classical and Late Latin are compared. Latin parameters are then compared to those of the modern Romance languages presented in Crisma et al (2020). The findings of these comparisons are explained in conjunction with details of the changes occurring. Finally, section 6, the conclusion summarises the findings of the study.

(2) Theoretical Background

(2.1) Models of linguistic relation

(2.1.1) The comparative method

One of the most widely used methods of lexical-etymological and phonological comparison is the classical comparative method which utilises data from daughter languages to reconstruct ancestral languages and their phylogenetic relations. The systematic nature of this approach allows for the reconstruction of unattested ancient languages (Weiss, 2014). This is done by compiling lists of data from daughter languages and identifying maximally parsimonious patterns of phonological change in order to produce the most natural reconstruction of the protolanguage. However, the imprecision of this data does not allow for precise distance measurements to be taken i.e., the metric problem. Due to its reliance on data from attested descendants, the comparative method is best suited to confirming existing relationship hypotheses rather than positing new ones. This is also known as the globality problem.

Although effective in terms of phonological comparison and historical sound reconstruction, the comparative method does have its limitations. The comparative method was only developed to

analyse lexical data. Although it can just about manage morphological data, the comparative method is not equipped to deal with syntactic reconstruction. Rankin (2017) among others argues that the comparative method can facilitate morphological reconstruction only in so far as it is related to phonological reconstruction. The problems that make morphological analysis difficult with classical comparative methodology make syntactic analysis all but impossible. The problem with syntactic analysis is two-fold; firstly, without a universally agreed upon set of syntactic comparanda there is no way of determining cognate-like relatedness of the type necessary for comparative analysis. Secondly, the possibilities for syntactic variation are more limited than for phonological variation, Harrison (2017) goes so far as to state that syntactic data cannot provide any insight into the genetic relation of historical languages as variation (or lack thereof) in any certain syntactic feature is rarely salient. This will be expanded on in section 2.2.

Another major drawback of the comparative method is its temporal limits. Using classical comparative methodology, it is not possible to analyse data for which there is significant geographical diffusion or a large time depth between the attested language and the protolanguage (Harrison, 2017). It is therefore much harder to determine genetic relation between daughter languages that have more ancient ancestors. For example, the comparative method is unable to provide a satisfying answer to the question of the existence of an Altaic macro-family and it does little to explain the status of the relationship between Japanese and Korean. A debate that has spanned decades is summarised by Norman (2009), who goes on to discuss his continued belief in the evidence of phonological and lexical commonality between the Altaic languages presented in Ramstedt (1957) and Poppe (1960). However, there are authors such as Vovin (2011) who argue that the comparative methodologies provide no evidence of a shared morphological system or shared basic vocabulary within the Altaic languages. Ultimately, it seems that large time-depth problems such as that of Altaic will never be convincingly resolved using the comparative method.

Thus, it seems that the comparative method was an extraordinarily useful tool to determine phonological, morpho-phonological, and lexical relations in the last two centuries. However, its temporal limitations and inability to deal with slower changing syntax mean it is not sufficient for problems of 21st century linguistics.

(2.1.2) Greenberg's multilateral comparison

To overcome the temporal limitations of the comparative method, Greenberg (1987) proposed his own method: multilateral comparison. The multilateral comparison method turns to broader cross-linguistic comparison. Rather than comparing the sounds of two languages the multilateral comparison method compares lists of words across many languages. Greenberg argues that this

reduces the risk of false positive relations whereby some accidental similarity is deemed evidence of relatedness.

Although this approach has the benefit of being applicable to very remote language sets its drawbacks are more salient. As discussed by Longobardi and Guardiano (2009) there are two major disadvantages to multilateral comparison: much like in the comparative method it is difficult to determine the mathematical similarity of two languages and there is no method of quantifying the degree of (dis)similarity beyond the accidental or non-accidental distinction. Even at the time of its emergence the multilateral approach was surrounded by much dispute which is summarised by Ramer and Hitchcock (1996) with Ringe (1992) being particularly critical of Greenberg's claim of having eliminated chance relation. Ultimately, Greenberg's approach did not adequately resolve the issues of the comparative method or even provide a suitable alternative.

(2.2) The role of syntax in historical linguistics

(2.2.1) A brief history of historical syntax

The 19th century marked the beginning of Linguistic comparison as we know it today – at least in phonology and morphophonology (Van Kemenade and Vincent, 1997). Earlier scholars had noticed the similarities between Indo-European languages and posited the existence of some unrecorded parent language from which they descended. Much of this early work in Linguistics focused on Classical languages. In a late 18th century conference Jones hypothesised a shared ancestor of Latin, Greek, and Sanskrit as referenced in Lightfoot (2013).

From the very beginnings of Historical Linguistics as a field of study until 1979 the focus was predominantly on phonological and lexical reconstruction. Haspelmath (2014) notes that over the course of the 20th century there were brief uptakes in interest in syntax in the 1920s (e.g., Schmidt's (1926) map of world language families), the 1960s (Greenberg, 1963) and again with the generative approach in the late 1970s and the 1980s. Then with Lightfoot's 1979 book sparking debate syntax made its way to the fore and its relevance to historical linguistics was seriously considered.

In the 1980s the formal study of syntactic diversity gained traction with Chomsky having laid the foundation in 1981. The Principles and Parameters model provided clarity on the nature of language variation as it delineated which sort of features are innate, and which may vary between languages. It was argued that the principles of language were rigid predetermined universal mechanisms, and the parameters were features which may be acquired by a learner during language acquisition in early childhood (Rizzi, 1989). With the advent of parameters, a defined and comparable unit of syntax, historical comparison and reconstruction suddenly became a viable option for syntacticians (Van Kemenade and Vincent, 1997).

One early attempt to create a "syntactic comparison method" took inspiration from Darwin's theory of natural selection in terms of survival of the fittest – whereby only the parameter most suited to the language would survive in it. Clark and Roberts (1993) proposed a computational approach using so-called *genetic algorithms.* To create a genetic algorithm individual parameter values could be set to 0 (absent), or 1 (present), and these individual parameters would then be amalgamated into an output grammar. They suggested that when pertaining to any given language these parameters would fit an optimal realisation of Universal Grammar to different extents and only those with the closest fit would survive.

(2.2.2) The opposition to syntax as a tool for historical comparison

There seems to be two reasons syntax has been neglected in historical linguistics. The first being that syntactic comparison is far less accessible than the comparison of other linguistic features (e.g., phonemes) and the second being that it was believed that syntax couldn't provide any useful insight into language relatedness.

The difficulty of syntactic comparison comes from the fact that compared to phonological variation syntactic change seems slow and erratic. However, this is not the case, although changes occur in syntax gradually these changes are found to be orderly (Kroch, 1994). Van Kemenade and Vincent (1997) describe syntactic variation as an S-curve where a feature appears stable until a very rapid change occurs before then plateauing. Their work summarises that of many other quantitative studies that also identify an S-shaped graph of syntactic change, including the original Kroch (1989). It is, therefore, harder to identify syntactic change as a large amount of diachronic data is needed. For many ancient languages, the acquisition of sufficient data to draw phonological conclusions is difficult and so the acquisition of sufficient data for syntactic comparison must have seemed near impossible. Furthermore, without discreet units of syntax there was no way of creating a standard means of comparison like phonemes are for phonology – this is commonly known as the correspondence problem.

Secondly, due to its seemingly inflexible nature syntax has long been considered inconsequential to historical comparison. There seemed to be a small finite number of options for the realisation of syntax and these realisations do not vary as fluidly as lexicon does. Consequently, it was believed that similarity in syntax did not indicate any genetic relation as there was too high a likelihood that the similarity was a product of chance. Harrison (2017) argues that because it is not abnormal for a language to have or not have any given syntactic feature there is nothing to be learnt from the comparison of syntax.

The argument laid out in Harrison (2017) is short sighted. If we apply the same argument to phonology, we can see exactly how myopic it is: if we take a single unit of phonology, for example, the voiceless velar plosive, and examine the languages in which it is absent (Māori and Tahitian) we see no genetic relation. Of course, this one fact does not render the entire comparative method impotent because the comparative method determines relation based on a vast number of comparisons. It is clear, as stated by Longobardi and Guardiano (2009) that comparison of a single feature cannot provide evidence of genetic relation, but the combination of many parametric values allows for the probabilistic computation of relation. Hence, any serious syntactic comparison method would determine relation or lack thereof based on the presence or absence of very many syntactic features. Thus, it seems that much of the opposition to syntax as a tool for historical comparison stems from the ineffectiveness of applying a method designed for phonology to syntax.

Lightfoot (1980) is also unconvinced of syntax as a means of historical comparison. He argues that the discontinuity of syntactic change critically inhibits the ability to understand the syntactic properties of a protolanguage from the study of its daughters. He argues that grammars are created by every individual learner through a constant process of reanalysis and so historical transmission does not occur. However, the flaws in this argument are twofold. Firstly, it is consistently assumed that inter-generational grammatical change is subtle i.e., the grammar of a child does not differ substantially from that of their primary care giver as the child tends towards the target grammar (Hale 1998). Secondly, Harris and Campbell (1995) point out that there is no reason for Lightfoot's argument to be limited to syntax. Taking his reasoning to the logical conclusion would mean a rejection of phonological reconstruction on the basis that acquisition by reanalysis is problematic.

Authors such as Haspelmath (2014) and Pires and Thomason (2008) provide more nuanced scepticism. Haspelmath discusses the difficulty of reconciling the need for a system of widespread universals and an ability to account for unpredicted interlingual differences in any comparative methodology. Pires and Thomason argue that although attempts at morphosyntactic reconstruction should not be entirely disregarded the irregularity of morphosyntactic change means that its study never yields as accurate reconstructions as that of phonological change. They also point out that daughter languages should not be trusted since the uniformity of surface forms may allow for the same reconstructed product to arise independently in various different daughter languages. I.e., surface syntactic uniformity is not necessarily indicative of genetic relation.

(2.2.3) The significance of syntax to historical comparison

With the new millennium came a renewed interest in syntax as a comparative tool. The late 1990s saw modernisation and the incorporation of statistics into linguistics research. This shift in the approach to data analysis in conjunction with the rise of linguistic computational models allowed for

a much more comprehensive analysis than had previously been feasible. Thus, it suddenly became possible to determine the probability of an event beyond the probable/improbable distinction of the 20th century. Manning (2003) discussed the possibility of applying probabilistic methods to syntactic typology. He argued that advancement in modelling meant structural features need not be observable at the surface level to be considered i.e., syntacticians may take into consideration the underlying structure of phrase when analysing diachronic change. Hale (1998) also identified a need for "a radical reconceptualization of the nature of syntactic change" (p.10) stating that the focus on observable features of historical syntax seriously limited the discipline. Hale suggests that newfound computational methods could be applied to previously inaccessible areas of study such as phonologically null syntactic functional elements.

In the last 20 years the revival of historical syntax has come to fruition with authors such as Oliviéri (2009) arguing for its relevance to comparative typology and historical reconstruction. Moreover, Longobardi and Guardiano (2009) make the case for syntax as a tool for determining phylogenetic relatedness. As alluded to earlier they state that the concept of parameters laid out in the Principles and Parameters method would serve as precise syntactic comparanda. With this one of key issues of 20th century historical syntax, the correspondence problem, was overcome. They also suggest that the sort of quantitative analysis that may be conducted on binary syntactic parameters is as, if not more, probative than the results of comparison of lexical data.

Furthermore, Longobardi and Guardiano (2009) go on to propose that syntactic data may be more useful than traditional lexical data in determining deep genetic relations. Since lexical data encodes form-meaning relation there are interminable opportunities for vagueness which are simply not possible in syntax. The binary nature of parametric syntactic data provides unambiguous distinctions in a way that is not possible with lexical data. This allows syntactic data to be analysed using computational models developed by biologists to produce genetic trees in deep history (as done by Longobardi et al (2013), Ceolin et al (2020) and Ceolin et al (2021)). Thus, with syntactic data ancient language families may be explored in ways that would be unthinkable using lexical data alone.

(2.3) The Parametric Comparison Method

(2.3.1) What is the Parametric Comparison Method and what does it solve.

In recent years there have been several propositions of syntactic comparative methodologies. Harris and Campbell (1995) attempted syntactic reconstruction under the comparative method by comparing so called "cognate sentences" in place of traditional phonological units. Owing to the ever-fluctuating nature of sentences this proved to be a dead end. No diachronic relation may be shared between sentences since lexical, morphological, and syntactic units rather than full sentences

are acquired by learners. Previous attempts to develop a novel method of syntactic comparison such as Sakas et al (2017) have focused on variation in a small number of syntactic features. Which, as pointed out by Harrison (2017) who maintains that syntactic comparison is doomed to be a fruitless endeavour, leaves chance with a significant role in the proceedings.

The Parametric Comparison Method negates this issue by laying out 94 parameters each of which represents a single syntactic property. Comparing a larger number of parameters at once significantly reduces the risk of false positive relation. Out of the vast number ($n>2^{40}$) of possible languages generated from these parameters any similarity between the approximately 6500 human languages are highly unlikely to result from chance (Ceolin et al, 2020). The sheer scale of the PCM addresses the issues laid out in Haspelmath (2014) as it allows for widespread analysis without erasing the features of individual languages. Furthermore, the use of discrete categories allows for precise distances and degrees of relatedness to be calculated (Longobardi and Guardiano 2009).

The Parametric Comparison Method builds on foundations laid by Clark and Roberts (1993). In addition to their present/absent distinction which is realised in the PCM as +/- the PCM posits a third null category, represented by 0. The null category codes for features that are presupposed by the setting of other parameters. The implicational structure of the parameter system means that whether or not a language has any given null parameter is irrelevant because that parameter was determined by the setting of an earlier one and so does not add any useful information. For example, the concept of grammaticalized agreement (FGA) is inconsequential in a language that does not have grammaticalized morphology (FGM) so rather than simply setting FGA to negative in -FGM languages like Cantonese or Mandarin it is set to null as there is no situation in which +FGA would be possible since grammaticalized morphology is, of course, necessary for grammaticalized agreement.

Heeding the warning of Pires and Thomason (2008), the existence of null parameters allows for more comprehensive comparisons between languages as it minimises the false proximity that arises from a large number of accidentally shared features. To elaborate on the previous example, in the absence of an implication condition FGA would be set to negative in Mandarin, Cantonese, Japanese, and Korean. Null parameters are not taken into account when calculating language distances and genetic relations which allows for a more accurate generation of phylogenetic families.

(2.3.2) Applications of the PCM

The fact that the PCM summarises languages as a set of binaries allows for statistical analysis. This allows for precise distance measurements to be produced by distance metrics and subsequently the computational generation of phylogenetic trees (Ceolin et al, 2021). Since there are discrete and measurable differences between the parameter values of any two languages their similarity may be

mathematically determined (Longobardi and Guardiano 2009). Furthermore, since all languages are analysed using the same system of parameters, comparison is possible between any two (or more) languages regardless of family, or level of isolation. This addresses two problems of the classical comparative method: the metric problem and the globality problem.

The linguistic trees produced using data from classical comparative models allow for the comparison of different historical language families but are not sufficient to make statistically reliable hypotheses about historical relations between languages from different families. Traditional models are thus limited. The tress produced by such models are often inconsistent with established knowledge of language families. Ceolin et al (2020) and Ceolin et al (2021) have shown that the PCM allows this comparison of language families and produces statistically supported historical hypotheses of inter-family relations. Most importantly, these hypotheses are statistically supported. This overcomes the time depth limitations inherent in classical comparative models. Let us consider the problem of Altaic laid out in section 2.1.1, classical comparative approaches could not provide a clear solution to this problem but using a clustering algorithm on parametric data Longobardi et al (2021) were able to find evidence to support a micro-Altaic family. In fact, this model was able to identify an even deeper relation, a Ural-Altaic family.

(2.4) Language change on the level of the individual

(2.4.1) Language acquisition under the Principles and Parameters model

Much of the older work within historical linguistics approaches change as something that sweeps through the vast homogenous unit that is language. It is crucial to our understanding of language change to take into consideration the internal pressures at play. Language is not one single abstract unit but rather the product of the individual languages of many individual speakers. As such the way these individual speakers acquire language must be taken into consideration.

It is important to be mindful of the fact that language change occurs first in the internal representation of that language in a speaker's mind. In other words, language change begins in the I-language (Chomsky, 1986a). These variable features of I-language are the parameters which are acquired during first language acquisition and flesh out the principles which provide the mechanisms and foundations of human language. The parameters laid out in the P&P model (Chomsky, 1981) are finite and binary. Each parameter may be either present or absent in a language. Due to their binary nature these parameters serve as minimal pairs (Longobardi and Guardiano (2009)).

Although a child learner does not need to acquire the immutable, innate principles of a language each individual speaker must set their own parameters from the evidence provided to them during early childhood. The ultimate goal being a set of parameters that successfully encode the target

language. The child must determine which parameter to set and how to set it from the input data (Pearl and Lidz, 2013). It is important to note that a single datum may be the surface representation of one or more parameters, moreover one parameter may give rise to many surface manifestations, so the setting of the parameters is not necessarily straightforward. Since the majority of input data will come from a child's primary caregiver it would be expected that the child acquires an identical set of parameters to that caregiver (Kerswill, 1996). Of course, this presumes that the language environment is stable and unchanging. If, during the acquisition stage, the learner is exposed to data which contradicts their original hypothesis for the setting of the parameter, it may be reset.

(2.4.2) Parameter resetting and diachronic development.

When a new feature becomes pervasive in the surface realisation of a language it interferes with the parametric make up of that language. This sort of interference may arise from language contact or linguistic innovation among other factors.

When some external factor causes a change in the surface realisation of the syntax of one generation of language users and this novel feature becomes widely used in a speech community the input value is altered for the children of that community. Since these children will receive the novel feature as input evidence, they will set the governing parameter differently to their parents who only began to use the innovative form later in life (Yang, 2000). This is attributed to the fact that the ratio of new to old forms encountered by the young learner is greater than that of the adult. Therefore, there is a higher probability of a novel form being acceptable to a child learner. The innovative feature now encoded by a new parameter setting in the grammar of the child will be passed down to future of generations of speakers. Thus, this change propagates through the language.

If an innovative feature exists but is not exclusively used i.e., if there are contexts where the old feature is prevalent children learning the language may acquire both features. In cases such as these the children may set different values for the same parameter although both values may occur in any context the frequency at which they do so varies in different contexts (Kroch, 1989). This is known as competing grammars since the learner has acquired both settings of a binary parameter which are, of course, contradictory. Over generations one parameter setting may become more frequent at the expense of the other. The case of competing grammars will be discussed in more detail in section (5.3) on Genitives in *The Rule of St. Benedict.*

(2.5) Latin

(2.5.1) Extant work

The Linguistic study of Latin is not exactly novel, in fact it began with the Romans themselves with philologists Varro, Praeconnius, Cato, et c. writing grammars and commentaries on the language and

its apparent degradation over time. In more recent history Latin's prominent role in the Indo-European language family has led to much study of its phonology and lexicon in particular with many viewing Latin as an invaluable resource for diachronic study (Sornicola 2011, Mateu and Oniga 2017).

The similarities between modern European languages and their relation to Latin was of particular interest to 19th and 20th century scholars. Ultimately, our understanding of Indo-European as a language family stems from the initial comparison of ancient languages: Latin, Ancient Greek, and Sanskrit. Where the work of Rask and Bopp identified deep rooted similarities too regular to be a product of simple chance. By comparing Latin and Greek phonology to that of English, Grimm (1822) was then able to provide a mechanistic explanation of the consonant shifts that occurred during the development of Germanic languages (Grimm's law). From the foundations laid by these scholars studying ancient languages, some over-arching language family relating Romance, Germanic, Indo-Iranian, et c. was posited. Once the relationship was proposed it was possible to reconstruct some Proto-Indo-European using the comparative method (Murray, 1996).

Although the influence of Latin syntax on European syntax has been studied, it has not received the same level of attention as phonology. Blatt (1957) first discussed the significance of the influence of Latin syntax on the syntax of various European languages and since then wavering attention has been paid to the field (Cornillie and Drinka, 2015). In the second half of the last century, classicists noted that Chomsky's approach to syntax may be applicable to Latin - Mateu and Oniga (2017) draw attention to a number of authors (Calboli, Castelli, Kelly et c.) working on areas of Latin syntax during that time. As the study of historical syntax grew in the 1990s and 2000s so did the study of Latin syntax with the understanding of variable parameters allowing scholars such as Gianollo (2005) to approach the disparity between Classical and Late Latin. Finally, in recent years there have been several studies focusing on specific areas of Latin syntax e.g., Gianollo (2005) on the Latin DP, Bortolussi (2012) on indefinites in Late Latin, Ledgeway (2017) on the word order of *Peregrinatio Egeriae.*

(2.5.2) At the boundary of Latin and Romance

It is well known that the modern Romance languages are descended from Latin. It is also accepted that the divergence of the Romance languages had already completely occurred by the late 13th century. However, what is not fully understood is how and why this happened. Wright (2016) argues that this split of Latin into numerous daughter languages was not predestined citing the relationship between Modern and Ancient Greek as evidence. He points out that although the language has evolved both Ancient and Modern Greek are still firmly considered Greek. Although the sociological causes of linguistic divergence are beyond the scope of this project and indeed of the PCM the study of Latin syntax can reveal much about these points of linguistic flux.

Collection and comparison of the parametric make up of Latin and Old Romance varieties may provide insight into the sorts of large-scale syntactic changes that occurred as the Romance languages diverged. So far data collected on modern languages using the PCM has been effectively analysed using both distance matrices (UPGMA) and character-based models (BEAST-2) to produce phylogenetic trees (Longobardi et al (2013), Ceolin et al (2020)) that determine the likelihood of genetic relation based on shared non-null parameters. Although neither of the models tested by Longobardi and colleagues produced results that exactly correspond to our current understanding of linguistic phylogenetics they shed light onto previously opaque deep history. Applying these same methods to ancient languages may yield results that in conjunction with in-depth case studies of specific changes (e.g., Gianollo (2017)) could provide an answer to the questions of how, when, and why Romance developed as separate languages.

(2.5.3) A note on Latin grammar

Due to the extensive fronting properties of adjectives and nouns Classical Latin had, what on the surface appeared to be totally free word order (Guardiano et al, 2016) which decayed as Classical Latin developed into Late Latin and then Romance (Magni, 2009). Therefore, in order to convey grammaticality Classical Latin had an extensive system of inflectional morphology with an exhaustive range of cases and tenses. There are six tenses: present, perfect, imperfect, pluperfect, future, and future perfect. This paper will focus on the nominal syntax of Latin however more detailed information about Latin verbal syntax can be found in Clackson (2011) or Pinkster (2015) and (2021).

Classical Latin had six cases each with a distinct purpose as demonstrated by the hypothetical sentences displaying basic grammatical competence laid out in the hypothetical examples (1) – (4). The nominative case is assigned to the subject of a sentence i.e., *Marcus* in example (1). The accusative case is reserved for the direct object of the sentence (*librum*). The dative case is used for the indirect object of a sentence i.e., *servo* in (1).

(1) *Marcus-* Ø *libr-um serv-o dedit*
Marcus-NOM;SG book-ACC;SG slave-DAT;SG give-PRS.ACT.IND.3SG.
Marcus gives the slave a book.

Classical Latin still has an ablative case which can be used to express concepts of *by, with,* or *from* as exemplified by (2). It may also be used to express location or movement. The two distinct uses of the ablative in Classical Latin result from the collapse of the old locative case into the ablative. At an earlier stage of the language location was expressed by a separate case i.e., the locative to movement which was expressed by the ablative. The Genitive case is used to express position or relation much like ‘s in English as demonstrated in (3). Finally, a vestigial vocative exists in Classical

Latin – this is primarily poetic and only remains distinct in the 2nd declension singular. The vocative is used to show direct address as in example (4).

(2) *Caesar-Ø cum militi-bus urb-em oppugna-v-it*
Caesar-NOM;SG with-ABL soldiers-ABL.;PL city-ACC;SG attack-PRF.ACT.IND.3S
Caesar attacked the city with his soldiers.

(3) *Ancill-ae felic-is Agamemnon-is ad*
Slave girl-FEM;NOM;PL happy-MASC;GEN;SG Agamemnon-MASC;GEN;SG to
forum ambula-ba-nt
market-NEUT.ACC.SG walk-IMPRF-IND.ACT.3PL
The slave-girls of happy Agamemnon were walking to the forum.

(4) *O Marc-e*
Oh Marcus-VOC;SG
Hey! Marcus!

In Classical Latin adjectives agree in case, person, and number with the noun they modify as exemplified in (3) where *felicis* agrees with *Agamemnonis* to produce the reading "of happy Agamemnon". However, there is no requirement for declensional agreement. There are five declensions in Latin, and these are a means of classifying nouns and adjectives. Nominals of the same gender have the same case endings. Latin also has three genders: masculine, feminine, and neuter. A summary of the case endings of the Latin declensions is provided in Table 1, courtesy of Kennedy (p.16, 1962).

Table 1: Summary of Classical Latin Nominal Inflections

Declension	I	II		III				IV		V
Stem	-a	-o		consonant		-i		-u		-e
SINGULAR										
	f.	*m.*	*n.*	*f.m.*	*n.*	*f.m.*	*n.*	*m.*	*n.*	*f.*
Nominative	a	us (er)	um	various		is, es	e, l, r	us	u	es
Vocative	a	us (er)	um	various		is, es	e, l, r	us	u	es
Accusative	am	um	um	em	various	e, l, r	e,l,r	um	u	em
Genitive	ae	i		is		is		us		ei
Dative	ae	o		i		i		ui(u)		ei
Ablative	a	o		e		i or e		u		e

PLURAL										
Nominative	ae	i	a	es	a	es	ia	us	ua	es
Vocative	ae	i	a	es	a	es	ia	us	ua	es
Accusative	as	os	a	es	a	es, is	ia	us	ua	es
Genitive	arum	orum		um		ium		uum		erum
Dative	is	is		ibus		ibus		ibus		ebus
Ablative	is	is		ibus		ibus		ibus		ebus

(2.6) The present study

(2.6.1) Existing uses of the PCM

There are two steps involved in parametric comparison. Firstly, parametric descriptions must be complied for each language in a sample. Secondly, these strings of parameters may be systematically compared to determine phylogenetic relationships between the languages in the group.

In their 2020 paper, which presented the most current dataset for the Parametric Comparison Method, Crisma et al. indicate that their 94 parameters have been set in 69 languages from 13 language families. With the 94 parameters having been formulated using a large data set of languages. Thus, the task remains for academics to set the parameters in other languages using the questions provided by Crisma et al.

(2.6.2) The present study

The present study expands on previous work on nominal parameter setting in ancient languages by presenting an extensive systematic analysis of the Latin DP and its diachronic developments based on the most recent version of the parameter list.

Setting parameters from textual data comes with a unique set of challenges since without native speakers to confirm the absence of a feature the evidence needed to set a negative parameter value is much harder to come by.

In analysing Latin using the PCM, this study determines the efficacy of the PCM as a tool for ancient language analysis. Since it has been possible to set all 94 parameters using data from a single text the ability to use the PCM on ancient languages may open new avenues of study which may allow for comparison and reconstruction even further back in history. For example, by feeding parametric data from Latin, Greek, Sanskrit et c. to the character or the distance-based algorithms used in Ceolin et al (2020) it may be possible to determine ancient genetic relation with a higher degree of certainty.

Starting 2000 years earlier in history may even make it possible to identify more ancient language families than are identifiable from modern language data.

Furthermore, the present study builds on the current understanding of Latin syntax by providing a broad overview of its syntactic make up and how this changes between Classical and Late Latin. This study's focus on syntactic change between the 1st and 6th century complements existing work that focuses on the diachronic development of specific syntactic features during that time period (e.g., Gianollo 2005, Ledgeway 2017).

(3) Methodology

(3.1) The corpus

(3.1.1) Text selection

The parameters of the PCM were designed to be set using the grammaticality judgements of native speakers. In order to set the parameters most appropriately, in Latin, texts that closely reflect the spoken language of the period must be used. The formal style of high prose written by authors such as Seneca and Cicero would likely reflect a grammarian's ideal of the language which at best would be reflective of a much older variety of Latin and at worst would never have been spoken. Where possible I have studied texts by presumed native (L1) Latin speakers who write in a more colloquial style. For the later texts it is impossible to determine whether authors were L1 Latin speakers as the language was used in officialdom long after it died out as a means of casual communication (Gianollo 2005). It is also likely that later Latin authors had more than one L1 and so it is likely that some form of language contact was at play.

Perhaps the most accurate representation of spoken language would come from the writing of lay citizens, not authors. Such writing can be found in graffiti such as that in Pompeii or on Roman curse tablets found in the hot springs at Bath. Curse tablets were written by Roman citizens of varying levels of education and ask for the gods' wrath to be brought upon their enemies. As such these would fulfil two of the required conditions for textual analysis: colloquial language from a native speaker. However, none of the writing samples from anonymous citizens are large enough for a full parametric analysis to be conducted.

The Classical period of Latin followed the old period and is considered to be from 75BC to the end of 299AD. This was followed by the Late or Vulgar period of Latin from 300AD to 699AD. In this project one text from Classical Latin and two texts from Late Latin have been studied.

(3.1.2) Satyricon

My first text is *Satyricon* by the author Gaius Petronius. Petronius lived and worked in Rome whilst the empire was still at full strength, however the exact dates of his life are contested. Various scholars have made the case that he lived and died at sometime between the 1st and 3rd centuries AD (Petersmann and Harrison, 1999). However, based on the social context and characters presented in *Satyricon* the prevailing belief is that this was written in the late 1st century under the reign of Emperor Nero (Rowell, 1958). Thus, *Satyricon* serves as a representation of Classical Latin in this project. *Satyricon* is the oldest surviving Roman novel of considerable length (Boyce, 2018) and at around 30,000 words the longest text analysed in this project.

Petronius was an educated man who would have been familiar with the stylistic rules of respectable Roman prose yet in much of *Satyricon* he chose to ignore these rules. *Satyricon* features a dinner party *(Cena Trimalchionis)* hosted by the fictional character Trimalchio. Trimalchio served as satire of the nouveau riche and as such is presented as speaking middle class Latin. Speeches from other characters, particularly freedmen, are given in working class Latin (Leiwo, 2010). The general colloquial nature of the text and the high volume of reported dialogue in *Satyricon* in conjunction with its casual prose provide a reasonable approximation to the spoken Latin of the time. Thus, it is an excellent candidate for parametric analysis. Of the three texts studied *Satyricon* is the most representative of spoken Latin in its period.

(3.1.3) Peregrinatio Egeriae

The next text, *Peregrinatio Egeriae* (also known as *Itinerarium Egeriae* and *Itinerarium)* is a long letter from a presumed holy woman to her (monastic) sisters detailing her pilgrimage to the Holy Land. It is worth noting, as Gianollo (2005) points out, that it was customary for aristocratic women of the period to take pilgrimage to the Holy Land so Egeriae may not have actually been a nun as is often presumed. Judging by reported landscape features her pilgrimage is thought to have taken place during the reign of Roman emperor Theodosius I (McClure and Feltoe, 1919). This would place her writing near the beginning of what is considered Late Latin, towards the end of the 4th century with the pilgrimage lasting four or five years during the 380s.

The text is fragmented with a little under 18,000 words remaining and little is known about the author. Férotin as referenced in Clugnet (1904) proposes that the author, Egeria, was a nun originating from Hispania Gallaecia. Hispania Gallaecia (modern Portugal) was a province of the Roman empire. The native Gallaecian language, much like the native Gaulish of Gaul, was largely wiped out by Roman conquest in 137BC although some minor Celtic tradition remained (Alberro, 2008). Therefore, we can reasonably assume that Egeria spoke Latin as a L1, but this may not have been her only L1. As a woman in 4th century Europe, it is unlikely that she would have received any formal education in the style of Latin prose. Furthermore, the nature of epistolographic correspondence suggests a more colloquial and personal tone. Thus, it is reasonable to believe that the written language *Peregrinatio* is close to the spoken Vulgar Latin.

(3.1.4) St Benedict's Rule

My final text is *The Rule of Saint Benedict (Regula Sancti Benedicti)* written in 516AD by St Benedict a monk from Nursia in central Italy (Dugdale, 1846). Being from the 6th century this text is firmly in the middle of the Late Latin period which ranged from the end of the 4th to the end of the 7th century. Latin was still the primary language of Italy at the time although it had changed substantially from the Latin of Antiquity. Of the three texts and authors most is known about *The Rule of St. Benedict.*

This is thanks to a biography of St. Benedict written by Pope Gregory the Great (de Vogüé, 1993). St. Benedict was the son of a Roman nobleman and received some formal education before retreating to the mountains to live as a hermit and commune with God.

This is the shortest of the texts studied at just over 13,000 words. *Regula Sancti Benedicti* is divided into 73 short chapters each advising on the management of a different aspect of monastic life. The instruction covers both practical managerial tasks and spiritual guidance. As such the tone and style of writing is not ideal for parametric analysis. The formal register and lack of dialogue in addition to the fact that St. Benedict spent several years living in isolation means that this text is unlikely to be a particularly accurate reflection of the spoken language of the time. It is important to bear in mind the limitations of this text when drawing conclusions about the language more broadly. However, despite the limitations there is much to be gained from study of *The Rule of St. Benedict* since it is so well documented. Additionally, this is an inescapable problem as the majority of Latin texts from the 6th century are similarly religious and formal.

(3.2) Other resources

(3.2.1) Latin resources

As a reference text for *Satyricon*, I used *Petronius with an English translation* by Michael Heseltine which uses Ernout's (1958) critical edition on the host site *Perseus*. This site provided the original Latin text with an English translation and some limited parsing. The grammatical information provided by *Perseus* provides all possible interpretations of a grammatical feature/pattern. A user vote system is in place to provide the "correct" interpretation in any particular context however as an unrestricted open access ballot the accuracy of this is questionable.

Fortunately, the resources available for the study of *Peregrinatio Egeriae* were more detailed. I primarily used the website *The Latin Library* which digitised the Heraeus (1908) critical edition of the texts. I also used the website *Syntacticus* which runs on Haug and Jøhndal's (2008) PROIEL treebank software. This provides a full grammatical work up of each word in context. On top of the Latin text and English translation *Syntacticus* identifies parts of speech and provides a syntax tree that shows the relationship between lexical items. Nouns and adjectives are explained in terms of declension, case, person, number, and gender. For verbs the tense, person, number, mood, and voice are given.

Finally, I used the 1997 Fossas et al edition of *The Rule of Saint Benedict* on the host site *Joan Lluís Vives Virtual Library* (2004). I also consulted Abbot Barry's English adaptation in *Saint Benedict's Rule* (Barry, 1997). This is a resource created for English speaking monasteries who wish to implement guidance from *The Rule of Saint Benedict* and so prioritises readability in English over fidelity to the Latin.

Additionally, in my analysis of all three texts I used *William Whitaker's Words* (Whitaker, 2023), a site which parses a Latin word and provides an English translation alongside all possible grammatical information. As well as *Kennedy's Revised Latin Primer* (1962) which summarises all Latin case endings and provides information on the function of each case.

(3.2.2) Using the Parametric Comparison Method

To set the parameters in the Latin texts I used the guidance laid out in Crisma et al. (2020, Supp. Mat.). Where an academic studying modern languages would ask these questions of a native speaker I searched for evidence within the texts and made judgements based on my knowledge of Latin.

Some parameters were easy to set, for example one need only read a sentence of either text to identify grammaticalized morphology (FGM). Yet other parameters such as uniform Genitive (GUN) and Noun under determiners (NUD) required much closer analysis. Furthermore, some parameters that we would expect to find were hard to identify as their surface representations are not common e.g., free reduced relatives (ARR) and full c-selection (CSE). Closely reading the text several times allowed me to identify these more elusive parameters.

Under the PCM, the value + indicates that the parameter is active i.e., *set* in a language: positive evidence is required to set a parameter to +. In other words, at least one of its manifestations must be seen in the language. The symbol – indicates that the parameter is not active i.e., it has not been set by the speaker. In principle, a parameter that is not active in a grammar does not generate a visible manifestation in the language. Without evidence of a particular feature in a corpus the value – is assigned as default. However, there are some cases in which the absence of a parameter in a grammar generates evidence that is incompatible with the positive value of that parameter. For example, in the languages where the parameter DGR (grammaticalized specified quantity) is set to + (i.e., it is active), DPs interpreted as definite are formally different from those interpreted as indefinite (for example, they take a definite article). Hence, if a language does not show any formal difference between definite and indefinite DPs, that can be taken as evidence that parameter DGR is not set in that language (namely that its value is -). This type of evidence is known as a *stop question* and is very useful when setting parameters in ancient languages because it allows the researcher to stop their search (i.e., to be sure that the value of the parameter is -). For example, in Latin, example (5) from section XCIII page 186 of *Satyricon* and (6) from section CXV page 242 of *Satyricon*. The lack of distinction (aside from the case ending) between *uxor* in (5) and *uxorem* (6) is sufficient to determine that grammaticalized specified quantity is not present in the corpus.

(5) *Amic-a* *vinc-it* *uxor-em*
Girlfriend-NOM;SG vanquish-PRS.ACT.IND.3SG wife-ACC;SG
The girlfriend vanquishes the wife.

(6) *In aliqua part-e terr-arum secur-a expect-at uxor-Ø*
In another part-ABL;SG earth-GEN;PL secure-NOM;SG waits-PRS.ACT.IND.3SG wife-NOM;SG
In another part of the world some confident wife waits.

If there was no stop question or insufficient evidence for a stop question, I read through the text to check for evidence of that certain parameter and if no evidence was identified the default was assigned.

As a dead language Latin presented some challenges for parametric analysis. Relying on textual data meant there were occasionally difficulties whereby the accepted understanding of Latin grammar did not match up with the required conditions for the parameter. One such example is ARR where Latin grammarians will state that Roman adjectives may roam (Walker, 1918). Additionally, all the descendants of Latin have adjectives that behave as free reduced relatives but none of the conditions originally laid out in Crisma et al. (2020, Supp. Mat.).) were met. Yet, it seemed unlikely that ARR was absent in any stage of Latin. In the texts, adjectives are seen to occur in a variety of sentential positions. Therefore, in order to provide evidence for ARR It was necessary to prove that adjectives (rather than nouns) moved freely in Latin. Although the original stipulations of ARR were not met it was possible to find evidence of strongly argumental adjectives of nationality (*Romanus, Aegyptius)* in both pre and postnominal positions. Thus, it could be considered that the surface position of adjectives is determined by adjectival placement rather than nominal movement and thus postnominal adjectives may be said to behave like free relatives.

The setting of null parameters was straightforward because they rely on the setting of previous parameters, no additional evidence was needed to set them. In principle, however, there should be positive evidence for some of these null values which would be assigned 0+.

(4) Results

(4.1) Full parametric analysis

(4.1.1) Overview

The parametric analysis of *Satyricon* and *Peregrinatio Egeriae* is available in the appendix; *table 3*. However, I was unable to set all 94 parameters in *The Rule of St. Benedict.* For this text I have only set parameters that did not rely on the setting of earlier unsettable parameters and that supplement the comparison of *Satyricon* and *Peregrinatio Egeriae.*

Satyricon and *Peregrinatio Egeriae* differ in two non-null parameters: uniform Genitive (GUN) and N under Manner 2 Adjectives (NM2). In both instances evidence of the parameter is found in *Satyricon*

but not in *Peregrinatio Egeriae.* The evidence from *St. Benedict*'s *Rule* adds provides insight into the diachronic development of GUN and related parameters.

(4.1.2) Issues with St. Benedict's Rule

Due to a dearth of evidence, I was not able to set all 94 parameters in *The Rule.* Initially, I attempted a full parametric analysis of this text, but this did not come to fruition. Due to the brevity and formal style of the text I was unable to find evidence of features that we would expect in Late Latin: free reduced relatives (ARR) and full c-selection (CSE). Although in general, a lack of evidence would suggest that any given feature is absent within a text I hesitate to draw that conclusion here since ARR and CSE are present in Classical Latin and every one of Latin's daughter languages. Moreover, CSE exists in every Indo-European language studied to date (Crisma et al, 2020). Given that these features are ubiquitous in both the ancestor and descendants of 6th century Latin it seems highly unlikely that they are truly absent from the language spoken by St. Benedict.

Furthermore, given the implicational structure of the PCM, the apparent absence of these parameters interferes with subsequent ones such as unstructured modifiers (UST), N under cardinals (NUC), etc. Therefore, the resulting parametric work up would bear little resemblance to Latin, or indeed, any Romance language. Thus, I decided to only investigate four parameters unaffected by CSE and ARR which may contribute to the discussion of differences between *Satyricon* and *Peregrinatio.* These are uniform genitive (GUN), free genitvie (GAD), GenL (GFL), and partial GenL (PGL).

The question remains why these parameter values cannot be found in *Regula Sancti Benedicti.* I believe the answer to this is two-fold: the text is too short and the style too formal. As an instruction manual for monastic life the prose of *Regula Sancti Benedicti* is dense and grandiloquent. With only 13,000 words split between 73 chapters much of *The Rule of St. Benedict* is written in the style of a list and so there is little room for complex expression. With that there is also limited scope for description and so there are comparatively few adjectives in the text, which made it particularly difficult to set ARR.

Finally, the absence of evidence for parameters that are highly likely to be present calls in 6th century Latin into question the legitimacy of any negative parameter setting in the text. Therefore, it seems best to limit the analysis to features for which evidence can be found, namely uniform Genitive and prepositional Genitive.

(4.2) Uniform Genitive (GUN)

Uniform Genitive is the property that allows non-adpositional Genitives to distribute freely within a sentence. It is in effect a combination of the features of the free and functional Genitives. A language with uniform Genitive has a Genitive that, like the functional Genitive, may appear immediately before (GenH) or immediately after a prenominal adjective (GenL) in the Noun Phrase (NP). This same Genitive must also behave like a free Genitive in that it must be freely iterable and formally marked by inflection (Crisma et al. forthcoming). The iterability of the free Genitive tends to manifest as the Genitive occurring at the rightmost or the leftmost edge of the NP. For a full description of the manifestations please see (Crisma et al, 2020, Supp. Mat).

(4.2.1) GUN in *Satyricon*

It is immediately apparent that the Genitive in Classical Latin has free properties as it is formally marked by inflection. For example, compare the Genitive *Minervae* to the nominative *Minerva*. There is also evidence in the *Satyricon* of the functional Genitive as there is evidence of the Genitive appearing in both the low (7) (section XLIII, page 70) and the high (8) (section XXX, page 42) positions. Although *navis* follows its headnoun it precedes the modifying adjective. This would suggest that GenH was raised over by the noun in this instance. This type of locational variation is only possible for a functional Genitive as, according to Hawkins (2014), the free Genitive may arise either at the left edge of the NP or at the right edge. Any Genitive arising between a noun and its modifier is most likely functional.

Sentences (9) (section LIV, page 94) provides evidence of the free Genitive but (10) (section LXXIII, page 144), and (11) (section LXXVII, pages 152 and 154) are less clear cut. The location of the genitive in (9) shows that it must be free. This could either be analysed as a free Genitive or as a low genitive, but GenL may not be crossed over by the noun in Classical Latin and consequently postnominal genitives must be analysed as free. *pedum* in (10) may be interpreted as either a high functional genitive in arising before a prenominal adjective or as a free Genitive in the edgemost position. Given the availability of both features it is impossible to determine whether this is a very high GenH or a free Genitive. (11) provides evidence for the availability of GNA word order but it is impossible to tell whether it represents free or functional genitive. Since it occurs before the noun and adjective it may be GenH, but it is possible that *perbonam* is acting as a free reduced relative in which case *ostiarii* would be GenL. Finally, its location at the edge of the NP may suggest that *ostiarii* is a free Genitive. There is no reason to believe that the lack evidence for the occurrence of Noun, Adjective, Genitive order is anything more than accidental.

(7) *Omn-is*[1] *Minerv-ae* *homo-Ø*
Every-NOM;SG Minerva-GEN;SG man-NOM;SG
Every one of Minerva's men

(8) *Embol-um* *nav-is* *aene-um*
bow-ACC;SG ship-GEN;SG copper-ACC.SG
The copper bow of a ship

(9) *Mal-um* *exit-um* *cen-ae*
Unfortunate- ACC;SG end-ACC;SG dinner-GEN;SG
[it would have been] an unfortunate end to the dinner.

(10) *Ped-um* *extrem-os* *pollic-es*
foot-GEN;PL outermost-ACC;PL thumb-ACC;PL
The outermost thumbs of their feet.

(11) *Ostiar-ii* *cell-am* *perbon-am*
Porter-GEN;SG room- ACC;SG excellent- ACC;SG
An excellent room for a porter.

Since the Genitive in *Satyricon* has properties of both free and functional Genitives it can be concluded that there was a uniform Genitive in this period of Latin.

Furthermore, the presence of GUN nullifies the subsequent parameters: free Genitive (GAD), GenL (GFL), and partial GenL (PGL). Since the presence of GUN presupposes the properties described by these parameters, they provide no novel information and so can be considered null.

(4.2.2) GUN in Peregrinatio Egeriae

Much like Classical Latin, Late Latin has features of the free Genitive. Comparing *Dei* from examples (12) (section I.1) and (13) (section II.5) to the nominative singular *Deus* makes it clear that the genitive case is inflectionally marked in Late Latin. Additionally, the following four examples show that the Genitive may occur in a variety of positions within an NP modified by an adjective. (12) shows what may be considered the functional position GenL. However, since the genitive in this case occurs at the rightmost edge of the NP it could also be considered a free genitive – this will be discussed in more detail in section 5.2.1. (13) and (14) (section XIV.2) also provide evidence of the Genitive occurring in the edgemost positions of the NP. Finally, (15) (section VI.4) shows that the Genitive may follow its head noun whilst preceding a postnominal adjective.

(12) *Mons-Ø* *sanct-us* *De-i*
Mountain-NOM.SG holy-NOM.S God-GEN.SG
The holy mountain of God.

[1] In this instance the freedom of distribution of the Latin *omnis* (all, every) allows an adjectival interpretation.

(13) *Totum-Ø* [2] *mons-Ø* [3] *De-i*
Whole-NOM;SG mountain-NOM;SG God-GEN;SG
The whole mountain of God.

(14) *Vit-ae* *ipsius* *testimon-ium* *grande-Ø*
Life-GEN;SG himself-GEN;SG testimony-NOM;SG great-NOM;SG
A great testimony of his life.

(15) *Iter-Ø* *erem-i* *arenos-um*
Path-ACC;SG wilderness-GEN;SG sandy-ACC;SG
The sandy path of wilderness.

Although the Genitive may arise in a variety of positions in the sentence it does not seem to be able to occur between a premodifying adjective and its head noun. If and only if a genitive occurred in the AGN position GenL could be considered present in the text. Since GenH is also absent there is not sufficient evidence to suggest a uniform Genitive in *Peregrinatio Egeriae.*

The absence of GUN means parameters (GAD, GFL, PGL) that were nullified in *Satyricon* are available to be set in *Peregrinatio Egeriae.* No evidence was found for GAD. Interestingly, although no direct evidence was identified for GFL this can be considered present if we except the N-raising hypothesis presented in the discussion. If we accept a positive setting of GFL then PGL is nullified.

(4.2.3) GUN in St. Benedict's Rule

Evidence can be found of uniform Genitive in *The Rule of St. Benedict.* Genitives have been found to occur on both the leftmost and rightmost edge of an NP modified by an adjective as indicated by examples (16) (chapter 31.10) and (17) (chapter 73.3) respectively. Example (17) is particularly salient as it provides evidence of an iterated Genitive which may only occur if the Genitive in question is free. The Genitive may also occur between the prenominal adjective and the noun (GenL) as in example (18) (prologue.49). Furthermore, the Genitives used by St. Benedict are still marked by the characteristic inflectional morphology.

(16) *Altar-is* *vas-a* *sacrat-a*
Altar-GEN;SG vessel-NOM;PL sacred-NOM;PL
The sacred vessels of the altar.

(17) *Rectissima-Ø* *norma-Ø* *vit-ae* *human-ae*
proper-NOM;SG standard-NOM;SG life-GEN;SG human-GEN;SG
The most proper standard of human life.

[2] *Totus* (whole) is taken to have an adjectival distribution as it behaves like English *whole* rather than *all* or *every.*

[3] It is generally expected that Latin adjectives agree with their head noun in case, number, and gender. However, in this instance *mons* is in the masculine whereas *totum* is in the neuter. This discrepancy is likely a result of the ongoing collapse of the Classical Latin grammatical system.

(18) *Inenarrabil-i dilection-is dulcedin-e*
Ineffable-DAT;PL love-GEN;SG sweetness-DAT;SG.
With an ineffable sweetness of love.

Examples (16) and (17)[4] provide evidence of the free Genitive in 6th century Latin and example (18) provides evidence of the functional Genitive. Unlike in *Satyricon* there is no evidence of GenH in St. Benedict's Latin. Even without this there is sufficient evidence to set GUN in this text. Once again setting GUN as present nullifies GAD, GFL, and PGL.

(4.3) Prepositional Genitive

(4.3.1) Prepositional Genitive in *Satyricon*

In Classical Latin there is nothing which could be construed as a prepositional Genitive and the uniform Genitive is ubiquitous. This is reflected in the evidence from *Satyricon*. The Romance Genitive construction *de/di* evolved from the Latin preposition *de* (from, about) (Gianollo, 2012) which is always followed by the ablative case in Classical Latin. In *Satyricon* the preposition *de* occurs 86 times and unsurprisingly in every instance it is immediately followed by a nominal in the ablative case within a sentence with an ablative reading. In other words, every occurrence of *de* is used to express motion "down" or "from" rather than any sort of possession or relation. Furthermore, no movement is permitted that would separate *de* from the ablative in the surface realisation.

(4.3.2) Prepositional Genitive in *Peregrinatio Egeriae*

Although there is no explicit evidence of *de* behaving as a prepositional Genitive in Egeria's 4th century Latin the role of the preposition does appear to be changing. The evidence provided by *Satyricon* shows that only the ablative may immediately follow *de* in the text[5]. However, this rule seems to have relaxed by the time of Egeria's writing in the 4th century. Only 229 of the 246 instances of *de* were immediately followed by an ablative in this text. Although ablative readings were retained in these instances long range agreement was permitted in the surface realisations of Egeria's sentences with the ablative being separated from *de* by some other syntactic unit.

Accusatives followed *due* in 13 of the 17 instances of *de* without ablative. There were also three instances of the nominative following the preposition and one instance where it is followed by a genitive. This is largely irrelevant as it seems likely that the genitive in this case is part of a larger ablative nominal.

[4] This must be taken with a pinch of salt as if N-raising over adjectives had occurred in this case it would have also crossed over GenL

[5] Although the ablative followed in the vast majority of instances of *de* in other texts it may be possible to find the occasional exception where the preposition is followed a noun in a different case.

(4.3.3) Prepositional Genitive in *St. Benedict's Rule*

The preposition *de* occurs 143 times in St Benedict's Rule and in the majority of those instances it induces an ablative reading. However, it appears that the rigid rules governing the location of the assigned ablative have relaxed from Classical Latin. Example (19) (chapter 1.12) shows one instance where a premodifying genitive phrase surfaces between the preposition *de* and the ablative it is governing. This shows that the ablative assignment is maintained between *de* and the noun even when they are separated in the syntax.

(19) *De quorum-Ø omn-ium horum-Ø miserrim-a*
About who-GEN;PL all-GEN;PL this-GEN;PL wretched-ABL;SG
conversation-e meli-us est sil-ere
way of life-ABL;SG better-NOM;SG be-PRES.IND.ACT.3SG silent-PRES.ACT.INF
quam loqui
than speak-PRES.ACT.INF
About this wretched way of life of all these so-called monks it is better to be silent.

There are two instances of *de* that are ambiguous as shown in examples (20) (chapter 7.32) and (21) (chapter 32.1). These sentences may either be interpreted as taking an ablative reading meaning "about" or they may display quasi-genitive behaviour. As shown by the (b) translation of (20) and (21) these instances of *de* may take a genitive reading. Since both a genitive and an 'about' interpretation is possible in these instances it is not possible to draw definitive conclusions about the state of the preposition. This could be taken as evidence of the origin of the reanalysis that innovated the prepositional genitive with *de.*

(20) *Et securi de spe retributionis divinæ subsecuntur*
(a) And [those who] follow in that way are sure about hope of divine reward.
(b) And [those who] follow in that way are sure of hope of divine reward.

(21) *Substantia monasterii in ferramentis vel vestibus seu quibuslibet rebus prævideat abbas fratres de quorum vita et moribus securus sit.*
(a) Through the resources of the monastery the abbot should provide the brothers about whose way of life he is sure with iron tools, or clothes, or whatever else.
(b) Through the resources of the monastery the abbot should provide the brothers of whose way of life he is sure with iron tools, or clothes, or whatever else.

Finally, there is one instance where the phrase following *de* is best suited to a genitive interpretation. Example (22) from chapter 2 sentence 26 shows *de* behaving as a genitive of origin.

(22) *Memor-Ø pericul-i Heli sacerdot-is de Silo*
Remembering-NOM;SG peril-GEN;SG Eli[6] priest-GEN;SG of Shiloh[7]

[6] No parsing provided for foreign name.
[7] No parsing provided for Hebrew loan word.

Remembering the peril of Eli priest of Shiloh.

(4.4) NP under adjectives

It can be considered that languages fall into three categories: those with premodifying adjectives, those with postmodifying adjectives, and those with both. Classical Latin belongs to this final category with all types of adjectives from the crosslinguistic structured sequence of adjectives appearing to both the left and the right of the head noun. The categorisation of Late Latin is less clear as not all types of adjectives are found to the left of the head noun.

(4.4.1) NP under adjectives in *Satyricon*

The following examples provide evidence that every category of adjective may pre-modify the noun in a Classical Latin NP. Sentences (23) (section LX page 112) and (25) (section XLVII page 82) provide evidence for Noun under cardinal (NUC) as the head noun surfaces after the cardinal in both indefinite and definite readings. As evidenced by sentences (24) (section LV page 98) and (25) respectively both manner 1 (quality/size) and manner 2 adjectives (shape/colour) can occur to the left of the head noun in Classical Latin. Thus, these provide evidence for NM1 and NM2, respectively. Finally, sentence (26) (section XXXV) indicates that adjectives of nationality may occur to the left of the noun they modify and so NUA (NP under As) may be considered positively set. However, there is no evidence of nouns occurring under GenL (NGL).

(23)*Inter haec-Ø tres-Ø puer-i*
Among these-NOM;PL three-NOM;PL boy-NOM;PL
Among these three boys

(24)*Grat-a peregrin-a hospit-a pieaticul-trix*
Beloved-NOM;SG foreign-NOM;SG guest-NOM;SG stork-NOM;SG
Our beloved foreign guest, the stork

(25)*Tres-Ø alb-i su-es*
Three-NOM;PL white-NOM;PL pigs-NOM;PL
Three white pigs

(26)*Circumfere-bat Aegyptius-Ø puer-Ø*
Carry around-IMPERF.ACT.IND.3SG Egyptian-NOM;SG boy-NOM;SG
clinan-o argent-eo pan-em
serving dish-ABL;SG silver-DAT;SG bread-ACC;SG
The Egyptian boy was carrying around bread on a silver serving dish.

(4.4.2) NP under adjectives in *Peregrinatio Egeriae*

In *Peregrinatio Egeriae* there is evidence that cardinals and manner 1 adjectives can appear to the left of the noun. However, there is no evidence that manner 2 adjectives may do so – this is another notable difference from *Satyricon.*

Examples (27) (section XVII.1) and (28) (section XXIV.10) indicate that cardinals may precede their head noun in both indefinite and definite contexts and thus provide evidence for NUC. Additionally, examples (29) (section III.2), (30) (section XXXVI.2), and (31) (section XI.9) make it clear that a variety of manner 1 adjectives may precede their head noun, thus provide evidence for NM1.

(27) *Tres-Ø ann-i plen-i*
Three-NOM;PL years-NOM;PL full-NOM;PL
Three full years.

(28) *Dic-t-is ergo his-Ø tri-bus psalm-is*
Say-PERF.PASS.PART-3S.ABL therefore these-ABL;PL three- ABL;PL psalms-ABL;PL
Therefore, once these three psalms are said.

(29) *Cum grand-i labor-e*
With great-ABL;SG effort-ABL;SG
With great effort.

(30) *Magna turba multudinis*
Large-ABL;SG crowd-ABL;SG rabble-GEN;SG
A large crowd of rabble.

(31) *Plan-i-or locus*
Flatter-COM-NOM;SG place- NOM;SG
A flatter place.

There is only one instance of manner 2 adjectives in *Peregrinatio Egeriae,* and in this instance it is postmodifying as shown in (32) (section VI.3). Therefore, there is no evidence of NM2 in the text. Consequently, NUA and NGL are nullified.

(32) *Mare rubrum*
Sea-HEADNOUN red-ADJ
The Red Sea

(5) Discussion

(5.1) Parameters of *Satyricon*

(5.1.1) Genitive production in Classical Latin

Classical Latin has features of both the free and functional Genitives. The inflectionally marked Genitive is found to occur in almost every conceivable position within the sentence. Five of the six possible orders of nouns (N), Genitives (G), and adjectives (A) are observed in Petronius. NGA is absent but there is no grammatical reason why it should be. Gianollo (2005) also discusses this and highlights that NGA order is found in other Classical Latin texts such as Pliny the Elder's *Historia Naturalis.* Therefore, there is no reason to suspect any grammatical prohibition of NGA and its absence can be assumed accidental.

The placement of the Genitive at the edge of the NP in ANG and GNA sentences such as (9) and (11) show a realisation of the Genitive that is typically reserved for free Genitives. Additionally, as is typical of uniform Genitives the Latin Genitive is formally marked by a system of inflections. There is also evidence of Genitive occurring in both the high and low position as shown by GAN and AGN sentences (7) and (8). Since it is only possible for functional Genitives to arise between an adjective and the head noun it modifies (Longobardi and Silvestri, 2013) it is clear that the Genitive must be functional in examples (7) and (8).

Since Classical Latin Genitives display features of both the free and the functional Genitive Latin can be considered to have a uniform Genitive. The uniform Genitive is a fairly uncommon grammatical property which currently is only attested in Latin, Attic Greek, Finnish, and Estonian. Since there is no uniform Genitive in any modern Romance language, we can expect to see it decline at some point of later Latin.

It is also worth noting that Genitives occur in both the pre- and post-nominal positions in Classical Latin. In *Satyricon* there is a slight tendency towards post-nominals as found by Gianollo (2005) where 57.4% of Genitives in the *Cena Trimalchionis* section of the text arose after the noun they modified.

Finally, there is no evidence that might suggest a prepositional Genitive in Classical Latin. Study of the preposition *de,* which would eventually become the Romance *di/de* Genitive, revealed no Genitive behaviour. In Classical Latin, *de* is strictly followed by an ablative and this was the case in 100% of realisations in *Satyricon.* It is therefore safe to say that the change that would eventually lead to the Romance prepositional Genitive had not yet begun at the end of the 1st century AD.

(5.1.2) Adjectives in Classical Latin

In Classical Latin prenominal and postnominal adjectives were licit. Depending on the texts studied different results are presented for the relative distribution of these adjectives. Walker (1918) finds that 80.7% of adjectives precede their noun in Caesar's Gallic wars and 68.5% of adjectives are

prenominal in Cicero's speeches. Gianollo's (2005) findings for Cicero's *Ad Familiares* are similar with 60.5% of adjectives being prenominal. Interestingly, Gianollo reports that only 42.8% of adjectives in *Satyricon* are prenominal.

This difference may be explained by a diachronic shift in the production of adjectives. Although the language of Cicero, Caesar, and Petronius is all classified as Classical Latin, Caesar and Cicero were writing around the middle of the 1st century BC and Petronius was writing over one hundred years later towards the end of the 1st century AD. This places Cicero and Caesar much closer temporally to Old Latin than the period in which Petronius wrote. It is also necessary to take into account the style differences – as a colloquial text *Satyricon* is more likely to reflect spoken Latin than the high stylistic prose of Cicero and Caesar is. Therefore, the distribution of adjectives observed in *Satyricon* may be more in line with spoken language.

With the numbers of pre- and post-nominal adjectives being similar, it is not surprising that there is evidence of all types of adjectives occurring prenominally in *Satyricon.* Manner1, manner2, nationality, and cardinal adjectives are all found to precede their head noun in *Satyricon.*

(5.2) Changing parameters in *Peregrinatio Egeriae*

(5.2.1) Genitive production in 4th Century Latin

Although Egeria still uses the full system of case morphology with reasonable fidelity there are some clear differences between the production of Genitives in *Peregrinatio Egeriae* and *Satyricon.* In *Peregrinatio Egeriae* only four of the six possible orders of nouns (N), Genitives (G), and adjectives (A) are observed. As exemplified in section 4.2.2, the orders NAG, ANG, NGA, and GNA are observed. This leaves GAN and AGN conspicuously absent. These orders correspond to GenH and GenL respectively as such on the surface it may seem that the functional properties of the Genitive have been lost from Late Latin. While it is always difficult to know how to interpret absences of particular kinds of evidence in historical texts, it is sometimes possible to make statistical arguments that the absences are or are not due to chance, but this is beyond the scope of the current work.

Given the reduced range of motion of the Genitive in *Peregrinatio* it is clear that the uniform Genitive is not at play in this text. The question remains whether this residual Genitive is free or functional. Let us first consider the evidence for the free Genitive. The Genitives observed in this text are consistently inflectionally marked and appear in a range of sentential positions including the edge of the NP as in (12), (13), and (14). This may suggest that the Genitive in Late Latin has the iterability feature of a pseudo-free Genitive. The location of genitives in relation to nouns in *Peregrinatio* suggests that they are unlikely to be free. According to Crisma et al (forthcoming) free Genitives tend to arise prenominally. However, the vast majority of Genitives in *Peregrinatio* (93.5% (Gianollo,

2005)) are postnominal. Given the weakness of the evidence for iterability and the fact that the Genitive in *Peregrinatio* does not tend to arise in the position typical of free Genitives it seems unlikely that the Genitive observed here is actually free.

In order to determine what the nature of the residual Genitive in Late Latin we must take into account the adjectives in these contexts. According to Gianollo (2005) there are equal occurrences of pre- and post-nominal adjectives in *Peregrinatio Egeriae.* Therefore, since it is equally likely for an adjective to occur before or after a Genitive the relative position of adjectives and Genitives does not provide much insight.

The fact that nouns can appear before both Genitives and adjectives is salient because it could suggest that the noun is raising over these Genitives and adjectives. Noun raising suggests that the Genitive exists in a low phrasal position. Since adjectives have an even distribution between pre- and post-nominal but Genitives are prevailingly post-nominal, we can assume that the Genitive occurs immediately below the attributive adjective and above the NP. In other words, the Late Latin spoken in Hispania Gallaecia employed a functional Genitive that was realised as GenL in the underlying grammatical structure.

Example (12) provides one example of GenL where it seems that the head noun may have raised over both the Genitive and the adjective. Prior to this movement the Genitive would have been realised in the typical GenL position below the prenominal adjective and above the head noun. So, although there are no clear surfaces realisations of GenL, that would correspond to an AGN word order, there seems to be evidence of its presence in the underlying structure. This seems the most likely reconciliation of the functional realisations of the Genitive and the remaining inflectional marking. A similar trend is observed in comparison of Classical Greek to Modern Greek. Where the Classical uniform genitive is reduced to GenL whilst substantial case morphology is retained.

Although the residual of the uniform Genitive is not free the possibility of a free Genitive in Late Latin may remain. The Romance *di/de* Genitive construction is derived from the Latin preposition *de* (Carlier et al, 2013). In Classical Latin this was always followed by a nominal in the ablative case. However, this rule seems to have been relaxed by the time of Egeria's writing. In *Peregrinatio* 17 of the 246 instances of *de* were not immediately followed by an ablative. However, the assigned ablative was often found later in the phrase – this is significant because in Classical Latin the ablative nominal was required to immediately follow *de* in the surface structure as is evident in *Satyricon*. It seems that *de* was still required to assign ablative, but Case-marked head nouns of these ablative phrases no longer needed to be adjacent to *de* in *Peregrinatio.* Whereas in *Satyricon* every instance

of *de* was immediately followed by a noun in the ablative; there was no evidence to suggest that long range agreement was licet in Classical Latin.

Although no instances of *de* could be considered to take a Genitive reading the change observed here is noteworthy. The possibility for *de* to occur before nouns which are not in the ablative may be indicative of the very early stages of a restructuring that allows *de* to precede Genitive pronouns in *The Rule of Saint Benedict* and would eventually lead to prepositional genitive in Romance. Therefore, despite the lack of sufficient evidence for +GAD (free Genitive), an undeniable shift in the use of *de* observed here.

(5.2.2) Adjective production in 4th Century Latin

While Classical Latin tended towards prenominal adjectives, Gianollo (2005) found exactly equal numbers of pre and postnominal adjectives in *Peregrinatio Egeriae*. This difference is substantial enough to materialise in the parametric analysis of the language. While it is possible for some types of adjectives to precede their head noun (manner1 and cardinal) my study of *Peregrinatio* found no evidence to support NM2 i.e., there were no instances of Manner2 adjectives preceding the noun they modify. However, since only one adjective of size or colour was identified the evidence to suggest that Manner2 adjectives cannot occur above their noun in 4th century Latin is weak.

There is only one Manner2 adjective present, *rubrum* (red), and it is part of the place name: *mare rubrum* (Red Sea). Since all adjectives within a place name are postnominal e.g., *mare mortuum* (Dead Sea) it is unwise to draw any concrete conclusions from this evidence alone. However, as discussed in the previous section it is possible for nouns to raise over adjectives in Late Latin which does suggest that the surface positioning of adjectives is in flux.

Additionally, it is worth considering the extent to which the relative occurrences of pre- and post-nominal adjectives is influenced by the type of text. It seems many of the premodifying adjectives in *Peregrinatio Egeriae* serve almost as epithets in appositive phrases such as *sanctus monachus* (holy monks) or *beati apostoli* (beatified apostles). Perhaps in a less religious text there would be relatively fewer prenominal adjectives. Unfortunately, this is hard to verify due to the dearth of texts from the period and the role of the Church in preserving any remaining documents.

(5.3) Genitives in The Rule of St. Benedict

(5.3.1) Genitive production in 6th century Latin

As seen in section 4.3.3, there is also weak evidence of the preposition *de* inclining toward Genitive behaviour. The use of *de* in a Genitive of origin in example (22) may suggest a shift in the role of the preposition from strictly ablative in Classical Latin to something more akin to the Romance *de/di*

genitive. Although it was much harder to discern the role and type of Genitive present in *The Rule of St. Benedict* there is evidence of some residual uniform Genitive in St. Benedict's writing. The evidence for each system is less substantive than for any of the forms of the Genitive in the other texts studied, though. This likely results from the combination of a much shorter texts and the competition between different means of Genitive production in *St Benedict's Rule.*

Of the six possible orders of nouns, Genitives, and adjectives only three were found in *Regula Sancti Benedicti:* AGN, GNA, and ANG. In that case presence of AGN order provides evidence of the functional position GenL. Whereby the Genitive appears between the premodifying adjective and its head noun. The existence of AGN as a surface realisation is particularly salient as this was not found in *Peregrinatio Egeriae.* Comparing these three sequences it is clear that the Genitive may behave freely by appearing at the edge of the NP in GNA and ANG. The presence of the order ANG suggests that there must be a post adjectival, but prenominal GenL which is also seen to iterate; in that case, ANG must be an instance of a free Genitive. The presence of GenL and a free Genitive is sufficient to positively set GUN. Although there is no evidence of GenH in this text, there is no structural reason to suggest that it is not permitted. The absence of GenH along with that of NGA and NAG may be chalked up to a paucity of tokens.

Perhaps the most interesting finding from *Regula Sancti Benedicti* is the behaviour of the preposition *de*. There are 143 instances of the preposition *de* in *The Rule* the majority of which have a clear ablative reading. It is worth noting that an ablative head noun was not required to immediately follow *de* for an ablative reading to be produced. In *Regula Sancti Benedicti* (like *Peregrinatio Egeriae*) it was possible for *de* to modify an ablative noun that was not directly adjacent to the preposition in the surface syntax as exemplified by (19).

The genitive pronoun *quorum* (whose) occurs twice in *The Rule* and in both instances, it follows the preposition *de.* An ablative reading is maintained in (19) where *de* is seen to agree with an ablative construction *(miserrima* conversatione) arising lower in the structure. However, the role of *de* is not so clear in example (21) where both an ablative and genitive reading would be plausible. Without further evidence it is not possible to say with any certainty whether a genitive or ablative reading in more appropriate in this case. The relocation of the agreeing ablative and the position of the Genitive after *de* in 6th century Latin without an overall genitive reading may show the first stage of a shift towards *de* as a component of the free Genitive. Additionally, the repositioning of *de* to occur before the Genitive allows for easier reanalysis from ablative to genitive interpretation.

Example (22) appears to have a genitive reading whereby *de* acts as a genitive of origin. Although it is possible for the ablative to express origin in Classical Latin it is highly unlikely that this is the case

here. In Classical Latin, the ablative of origin may only occur with some verb of descent or progeneration without such a verb in example (22) the only way of expressing origin is with the genitive. Therefore, *Heli de Silo* can be taken to be a genitive realisation of *de* meaning "Eli of Shiloh." This form of the genitive is also found in modern Romance languages particularly in personal names e.g., the Italian *Leonardo da Vinci* meaning "Leonardo from the town of Vinci" and the French *Valéry d'Estaing* where the surname d'Estaing means literally "from Estaing." The prevalence of the genitive of origin in Romance nomenclature lends weight to the theory that *de Silo* is indeed a genitive formation.

The evidence presented here shows that *de* displayed genitive behaviour in at least once instance, the genitive of origin. There is also evidence to suggest that the role of *de* was shifting towards that of a possessive genitive. As such, it seems that the shift from Classical *de+*abl to Romance prepositional genitive is in motion during the time of St. Benedict. Although there is insufficient evidence to warrant setting GAD as positive it is clear that change was afoot.

(5.3.2) Competing grammars in *The Rule of St. Benedict*

It is not expected that any language would allow both a prepositional Genitive and a full uniform Genitive. Working on the assumption that the example (22) is truly a genitive construction the evidence from *The Rule of St. Benedict* therefore suggests a language in flux. It is important to determine what sort of change is occurring. There are two possible explanations for the apparent role of *de* in St. Benedict's writing.

One possible explanation of this occurrence is that of stylistic error. It is possible that the transition from uniform to prepositional Genitive had already occurred by the time of St. Benedict's writing, but this is not reflected in the text. This may be due to the author mimicking the stylistic practises of Classical Latin authors. Using an older version of the language over which he does not have native control may have led to the occasional slip up whereby the authors native grammar shines through in his writing i.e. the use of *de* to form a Genitive of Origin.

The second explanation is that of competing grammars. In order to understand this argument, we must first consider how syntactic features are learnt generally. In a system where no syntactic change is taking place a child learner will acquire a grammar that may produce only that which is encountered in the primary corpus and do so completely and accurately. Since the primary corpus is stable in syntax which is not changing there would be no need for the learner to reanalyse or reset any of the parameters encountered in the early stages of acquisition. However, when a learner is exposed to evidence that contradicts the grammar they have developed, they are forced to relinquish the original restrictive hypothesis. The learner will reset their parameters taking into

account the novel and contradictory information. If the new parameters were to completely eclipse the old system in a single generation, this new set of parameters would be passed onto the next generation of speakers. However, syntactic change is rarely this simple.

The competing grammar hypothesis is a means of explaining the parallel use of conflicting syntactic features on the level of individual speakers. It can then be used to explain the process of diachronic grammatical change. Much like in the evolution of morphological doublets when a new syntactic feature arises in the language speakers will acquire at different frequencies in different contexts. In some instances, the old feature will be predominant whereas in other the novel form will be favoured (Kroch, 2001). Each new generation of speakers will acquire the innovative form at a slightly higher frequency until, after several generations, the old feature is eventually usurped (Kroch, 1994). During the periods in which the two features co-exist speakers are said to have competing grammars. In terms of parameters this manifests with speakers acquiring both settings of the parameter.

Applying this to the case of Genitives in *The Rule of St. Benedict* shows that St. Benedict was able to use both the old uniform Genitive and the prepositional Genitive of origin in his writing. The many instances of the old feature compared to the one concrete example of the new suggests that St. Benedict was writing in the early stages of Genitive evolution.

If we accept the competing grammars hypothesis in this case, there are a few caveats that must be taken into account. *The Rule of St. Benedict* is a formal document written by a highly educated man, as such it is likely to adopt formal stylistic practices that are not representative of the spoken language of the period. Moreover, this formal style is likely to hark back to the style of Classical authors. Which would result in an over representation of the older uniform Genitive. Although, it is likely that competing grammars were at play here the frequencies appearing in the text are likely to be over representative of the older, more prestigious, feature.

The idea that the use of *de* as observed in *Regula Sancti Benedicti* is a result of an attempt by the author to write in the style of the Classical Latin in which he is not native does not seem infeasible. However, the competing grammar hypothesis provides a much more comprehensive explanation of the parametric competition observed in *The Rule of St. Benedict.* This model also allows for a smoother explanation of the transition into the prepositional Genitive observed in Old Romance. But that is not to say that case collapse did not play some role in the production of the prepositional Genitive.

(5.3.3) The impact of competing grammars on parametric analysis

In setting some parameters stop questions may be used whereby the presence of a manifestation that is incompatible with the positive value of a parameter would signal that the parameter is not set

in the language (value -). This allows negative parameters to be set with a higher degree of certainty. However, the presence of competing grammars complicates this.

If a language may exhibit manifestations of both values of a binary parameter, stop questions become redundant as we can no longer assume that presence of a certain feature entails the absence of another. When speakers may have two grammars which allow a parameter to be simultaneously present and absent the stop questions no longer provide certainty. As such they must be approached with caution. In some cases, we may be reasonably sure of a stop question such as with ALP (inalienable possession). Despite the propensity for competing grammars in *The Rule of St. Benedict* we can be reasonably sure that the absolute lack of grammatical distinction between alienable and inalienable nouns indicates that ALP is absent. This assumption is reasonable since no Indo-European language is +ALP.

Other situations call for a more nuanced approach such as the stop question presented in section (3.2.2) for DGR. Since DGR is present in all the Romance languages finding evidence where there is no distinction between definite and indefinite realisations would not be sufficient to set it as absent in *The Rule of St. Benedict.* In order to be sure of the absence of DGR in *Regula Sancti Benedicti* we should check whether each noun that occurs with both definite and indefinite readings has the same morphology in both cases. This is necessary as there is already some evidence to suggest competing grammars in St. Benedict's writing and so it is possible that DGR is caught up in that grammatical competition and as a result is variably present.

(5.4) Parametric comparison

(5.4.1) Comparison of 1st and 4th century Latin

Satyricon and *Peregrinatio Egeriae* differ in two non-null parameters: GUN and NM2. They have a Jaccard similarity coefficient of 0.09. In order to calculate the Jaccard index the sum of the parametric differences is divided by the sum of the eligible comparisons – as summarised in the equation below. As laid out in Ceolin et al (2020) the Jaccard approach calculates distance between two strings of parameter values on the basis of convergence on "+" values. Pairs of "-" or any instance of "0" are not taken into consideration when calculating the Jaccard similarity coefficient.

$$\Delta \text{ Jaccard } (A,B) = [\ N\text{-+} + N\text{+-}\ ] / [\ N\text{-+} + N\text{+-} + N\text{++}\ ]$$

The Jaccard distance is used because by comparing only positive evidence there is a lower chance of determining that two languages are related when they are not. By eliminating null parameters only parameters that provide novel (non-redundant) information is used to evaluate relatedness. This reduces the likelihood of the calculation of an overly positive relation value. Additionally, the Jaccard

distance requires each comparative pair to have at least one positive parameter. This reduces the chance of false relation as there is a much higher barrier to agreement with a positive parameter than a negative one.

(5.4.2) Comparison of Latin to modern Romance languages

Table 2 shows the Jaccard distances between Classical Latin (*Satyricon*) and Late Latin (*Peregrinatio Egeriae*) and each of the Romance languages whose parameter values were laid out in Ceolin et al (2021).

Table 2: Jaccard distances between Latin and Romance languages

	Classical Latin	Late Latin
Sicilian (Sic)	0.19	0.23
Northern Calabrese (NCa)	0.19	0.23
Italian (It)	0.18	0.18
Spanish (Sp)	0.14	0.14
French (Fr)	0.27	0.27
Portuguese (Ptg)	0.18	0.18
Romanian (Rm)	0.26	0.26

The results of the Jaccard analysis are surprising. It would have been expected that Late Latin would tend to be closer to modern Romance languages than Classical Latin given that Late Latin is closer in time to modern Romance. Yet it was found that Italian, Spanish, French, Portuguese, and Romanian are equally far from Classical and Late Latin. This likely results from the presence of GenL in *Peregrinatio Egeriae.* This transitional form of the Genitive deviates both from Classical Latin and from Romance since a non-uniform functional Genitive exists in neither.

In Classical Latin, the presence of GUN nullifies the three parameters that follow it (GAD, GFL, PGL). In Late Latin these are not nullified but the presence of GFL nullifies PGL and the absence of NM2 nullifies the next two parameters (NUA, NGL). As such there is an equal number of non-comparable parameters when each Romance language is paired with either variety of Latin. Thus, despite Late Latin developing more Romance features the parametric distance from each Romance language is identical to that of Classical Latin.

In terms of syntax, French is the furthest of the Romance languages from either variety of Latin. This distance stems from the lack of number marking on nouns. All of the other languages in the sample show number morphology on the noun. French shares some features with Romanian: adjectival possessives (APO) and DP under Loc (TNL) which are not present in Latin or the other major Romance languages.

Comparing the varieties of Latin to Italian dialects Sicilian and Northern Calabrese provides interesting results. These dialects are 0.04 closer to Classical Latin than to Late Latin. The main difference between these dialects and the rest of Romance is their treatment of adjectives. Adjectives may only very rarely occur prenominally in Sicilian and Northern Calabrese whereas in the rest of Romance certain types of adjectives may be prenominal and in Latin any adjective is permitted to occur to the left of the noun. This might suggest that Sicilian and Northern Calabrese split from Latin during the Classical period.

(5.5) Diachronic development of the Latin Genitive

(5.5.1) Comparisons of the different stages of the Latin Genitive

The changes that are observed between *Satyricon* and *Peregrinatio Egeriae* are unsurprising as are those that are observed between *Satyricon* and *The Rule of St. Benedict.* However, looking at all three texts together yields some particularly interesting results. The uniform Genitive which was firmly present in *Satyricon* seems to be unattested in *Peregrinatio Egeriae* but marginally reappears about 150 years later in *The Rule of St. Benedict.* I will consider two possible explanations of this.

The difference in GUN between *Peregrinatio Egeriae* and *The Rule of St. Benedict* may be the product of early geographical divergence. *Peregrinatio Egeriae* was written by a speaker from Hispania Gallaecia (present day Iberia) whereas St. Benedict was a native of Nursia in central Italy. Gallaecia was inhabited by a Celtic people prior to Roman invasion and these people fiercely resisted Roman rule and the imposition of Latin, thus much of the Celtic tradition was preserved in the region (Alberro, 2008). Although there is no evidence of Celtic being widely spoken alongside Latin during the Roman occupation of Gallaecia it is likely that the inhabitants of the region had weaker cultural ties to the Latin language. It is also possible that speakers were influenced by some residual Celtic language. Therefore, it is possible that the process of language change was sped up in the Latin of the region. Whereas it seems likely that Nursia in the Italic heartland region of Umbria would have had a dialect much closer to that of Rome and perhaps less susceptible to change. As a region occupied by high-ranking Roman citizens the inhabitants of Nursia would likely have applied the same high moral and social status to speaking Latin as was the norm in Rome (Adams, 2003).

This argument would be stronger if the Genitives of the two regions developed in separate ways or if there was some substantial evidence of language contact in Hispania Gallaecia. Furthermore, the fact that the rest of the parameters set for *Peregrinatio Egeriae* are in line with what would be expected for a language between Classical Latin and modern Romance suggests that there was little to no outside influence.

The more likely explanation of the presence of GUN in *The Rule* and its absence in *Peregrinatio Egeriae* is sociological. As a member of the Roman elite St. Benedict is likely to have acquired a more conservative version of Latin alongside the novel prepositional Genitive. Moreover, as a highly educated man St. Benedict was likely taught to write in the traditional Roman style which would emulate authors such as Pliny, Tacitus, et c.. Thus, his use of the old Genitive is in line with the expectations of this style. Egeria, on the other hand, is unlikely to have a received much if any formal education and so her writing would have been much more reminiscent of her speech.

Of course, geographic dialectal differences are relevant alongside the social factors at play here. It seems that the loss of the uniform Genitive was occurring across Late Latin but perhaps at a greater rate in regions less culturally and linguistically tied to Rome.

It is also important to consider the realisations of the free Genitive in the three texts. In *Satyricon* the free Genitive which forms part of the uniform Genitive is clearly inflectionally marked and iterable. In *Peregrinatio Egeriae* there does not appear to be a free Genitive. Finally, in *The Rule of St. Benedict* there is one instance where *de* seems to induce a genitive reading in the form a genitive of origin. The development of *de* from a preposition followed by the ablative (with the usual 'from/about' meanings) in *Satyricon* to a preposition still an ablative reading but more flexible surface location in *Peregrinatio Egeriae* and then possibly beginning to increasingly compete for some Genitive roles in *Regula Sancti Benedicti* is in line with expectations. Since the prepositional Genitive in Romance is formed with the prepositions *di* or *de.* The comparison of these three texts might allow for the observation of the initial stages of development from *de* as an ablative preposition in Classical Latin to *de* as a modern Genitive.

(5.5.2) Genitives in Latin and Romance

The Genitive of *Peregrinatio Egeriae* seems to be in a transitional state. It is like neither the Classical Latin Genitive nor the typical Romance Genitive. Although the assignment rules governing de+abl do not seem to be as strict in *Peregrinatio, de* cannot yet be considered a prepositional Genitive. The free Genitive portion of the old uniform Genitive has been lost leaving only the functional Genitive in the low position. However, this GenL does not surface in its typical position because it is a raised over by the noun in a process of N-raising which survives into Romance. This will be discussed further in

section 5.6.2 on Adjectives. Additionally, there is no evidence of the functional Genitive in the high position here.

The functional Genitive although still present in *The Rule of St. Benedict* exists in a weakened state. There is no evidence of it in the high position in this text whereas in *Satyricon*, where the uniform Genitive is strongest, there is substantial evidence of both GenH and GenL .

The relocation of the Genitive pronoun *quorum* to immediately follow *de* suggests a transitional state of language. Even if the readings from examples (20) and (21) cannot be considered strictly genitive in *Regula Sancti Benedicti* this movement would support the reanalysis of ambiguous sentences from ablative to genitive reading. This is particularly likely because of the proximity in meaning of ablative "from" and genitive "of" interpretations. Additionally, the use of *de* to form a genitive of origin in *The Rule of St. Benedict* suggests that the Genitive of St. Benedict represents some middle stage of development from strict uniform Classical Latin Genitive to the prepositional Genitive of Romance.

Extrapolating the patterns of Genitive development from 1st to 6th century Latin anticipates some features of the Genitive that we observe in the modern Romance varieties. From the Late Latin data, we would expect to eventually see the novel prepositional Genitive with *de* out-compete the old free part of the uniform Genitive in the grammar of speakers. This pattern is observed in later stages since GAD is present in all seven of the Romance languages studied in Crisma et al (2020) whereas GUN is absent. We may have found marginal hints of this in *Regula Sancti Benedicti.*

We would also expect to see the loss of the functional portion of the uniform Genitive following its weakened position in Late Latin. Again, this prediction is supported by the findings of Crisma et al (2020) as six of the seven Romance languages show no functional Genitive and the seventh, Northern Calabrese, has only a partial functional Genitive i.e., partial GenL (PGL) which is also found in Old French. This tendency we found in both *Peregrinatio* and *The Rule of St. Benedict.*

(5.6) Diachronic development of the Latin Adjective

(5.6.1) Comparisons of the different stages of Latin adjectives

Earlier Classical authors such as Caesar and Cicero favoured the prenominal adjective with the majority of adjectives in a variety of their works being prenominal. Petronius however does not show the same preference for prenominal adjectives with only 42.8% of adjectives in the *Cena Trimalchionis* portion of *Satyricon* being prenominal (Gianollo, 2005). Compared to Petronius, even Egeria uses a higher proportion of prenominal adjectives – 50% (Gianollo, 2005). Overall, however there does appear to be a pattern of decreasing prenominal adjectives in Latin whereby later texts tend to default to postnominal adjectival modification.

This pattern becomes clear when comparing the parameter values for *Satyricon* and *Peregrinatio Egeriae.* In the former, any kind of adjective is permitted to occur to the left of its head noun leading to positive settings for NUC, NM1, NM2, and NUA. In the latter adjectives are only observed to the right of Manner 2 adjectives leading to -NM2 and null NUA. Since there is only one Manner 2 adjective present in the text the conclusions drawn are relatively weak.

(5.6.2) Adjectives in Latin and Romance

The key development from the Latin of *Satyricon* to that of *Peregrinatio* is the location of Manner2 adjectives. In Classical Latin they surface before their noun but in Late Latin and Romance Manner2 adjectives are raised over by the noun they modify. In such instances the noun raises to the head position in the functional projection of the adjective to the left of the DP (Alexiadou, 2001). Although these adjectives occur to the left of the base position of the noun their surface realisation is postnominal.

Despite the fact that adjectives occur in both the pre- and post-nominal positions in Classical Latin N-raising does not take place. The syntax of Classical Latin is such that both adjectives and Genitives may emerge with a base position on either side of the noun (Crisma and Gianollo, 2006). Consequently, no movement is necessary to produce the prenominal reading as is the case in Late Latin and Romance. In Late Latin, the free Genitive of Classical Latin collapses and the rules surrounding the location of adjectives become stricter. Crisma and Gianollo note a tendency for appositive adjectives to arise to the left of the noun and restrictive adjectives to the right. With less freedom of realisation there is scope for N-raising in Late Latin which did not exist in Classical Latin.

The beginnings of N-Raising that emerge in Late Latin continue to develop and are present in all modern Romance languages. In Italian, Spanish, French, Portuguese, Romanian certain types of adjectives are permitted to precede the noun, namely: Manner1 and cardinal adjectives. Manner2 adjectives are not permitted to premodify. In Sicilian and Northern Calabrese virtually only numerals may precede the noun. Only some specific adjectives may premodify as the majority are postnominal (Guardiano and Stavrou, 2019). Therefore, it is possible that Sicilian and Northern Calabrese did split from Latin before the shift to N-raising that occurred in the Late period and that they must have developed a stricter set of N-raising rules in parallel to the development of N-raising in Latin.

(6) Conclusions

This study set out to create a dataset of the parametric values of Classical and Late Latin of the same type as those presented in Crisma et al (2020) for 69 modern languages. This has been done with some success. The existence of this new Latin parametric dataset opens the doors to further

research. The fact that it is possible to parametrically analyse language based on textual data alone significantly increases the number of languages that may be studied in this way.
This study has used the parametric grid worked out for applying Parametric Comparison Method to determine that some of the syntactic changes that lead to features of modern Romance nominals began in Latin. A satisfactory answer to research question one was largely found, since the full set of parametric values were set in one text from Classical Latin and one text from Late Latin. However, this objective was not fully met since I was unable to complete a full parametric analysis of *The Rule of St. Benedict.*

In answering research question (1), I was also able to address the efficacy of the PCM as a tool for historical analysis. It seems that the Parametric Comparison Method is well suited to use on textual data. Given the inter-author variation in Latin texts some discretion is necessary for analysis, and it is certainly beneficial to have an understanding of formal Roman writing practises. Parametric analysis of ancient languages using the PCM is, of course, more difficult than analysis of modern languages. The inability to glean grammaticality judgements from native speakers means that we cannot be certain of negative parameter values, which may only be set from an absence of evidence.

Additionally, as is the case generally with historical studies, analysis with the PCM may be severely limited by the quality of texts available. For example, despite finding enough evidence to set the Genitive cluster of parameters, I was unable to set all 94 parameters in *The Rule of St. Benedict* because there was insufficient evidence in the text. For example, no evidence was found of parameters CSE and ARR which we would expect to be positively present in 6th century Latin. Their positive settings are expected because they are present in 1st century Latin, 4th century Latin, and all modern Romance languages. Due to the implicational structure of the 94 PCM parameters the lack of evidence for ARR and CSE would have drastically changed the resulting parametric work up of 6th century Latin. The resulting set of parameters would not have resembled that of any IE language. As such, the parametric analysis of *The Rule of St. Benedict* would not have provided a meaningful set of comparisons. To mitigate this issue, future analyses may benefit from the use of more extensive corpora which contain multiple texts from any given period of study. This would also allow for brief snippets of colloquial texts such as those found in graffiti or curse tablets to be used in linguistic analysis.

In answer to research question (2), significant developments in Latin syntax were observed from the Classical to Late period. The well documented reduction of the largely free word order of Classical Latin (Traugott, 2017) is reflected in my parametric analysis. The loss of GUN and NM2 in *Peregrinatio Egeriae* produces a more rigid surface distribution of genitives and adjectives in Late Latin.

Additionally, the presence of GFL in the 4th century text suggests that the Genitive is in a state of flux caught somewhere between the uniform Genitive of Classical Latin and the prepositional Genitive of modern Romance. Since the free portion of the uniform Genitive has been lost but the functional behaviour remains, the Genitive of *Peregrinatio Egeriae* can be clearly linked to that of Classical Latin.

The relation of the 4th century Genitive to the Romance Genitive is less clear. Since in *Peregrinatio Egeriae* the preposition *de* was occasionally followed, in the surface structure, by non-ablatives (although ablative readings were maintained) a clear shift in the rules governing *de* is observed as Classical Latin grew into Late Latin. The degeneration of the strict de+ablative assignment continues in *The Rule of St. Benedict* where *de* was observed to read as a genitive of origin. As such research question (3) is answered: not only did the parameters in Latin already show signs of the resetting that would eventually lead to Romance syntax but some of them had already undergone this process.

However, the results from the Genitive analysis of *The Rule of St. Benedict* were not entirely straightforward. Since both a uniform and a prepositional Genitive were observed in the text, we can assume that these two opposing grammars were competing in the mind of the author. The evidence from this text provides insight into how the syntactic change from Late Latin to early Romance took place in terms of speakers. St. Benedict is observed to have two competing formations of the Genitive in his mental grammar which may suggest a competing grammar scenario in which both settings of binary parameters may co-occur. Comparison to the parametric values of the modern Romance languages tells us that the pseudo-prepositional genitive that St. Benedict used on in example (22) will eventually eclipse the uniform Genitive.

Furthermore, the absence of GUN in the 4th century *Peregrinatio Egeriae* but its presence in the 6th century *Regula Sancti Benedicti* must not be overlooked. There are a myriad of non-linguistic factors that may explain this. It may be a product of St. Benedict's attempt to adhere to a Classical writing style or it may be a result of geographical dialectal differences. It is also possible that GUN was absent from *Peregrinatio* but not from Egeria's grammar or from 4th century Latin. From the study of these texts no definitive conclusion can be reached but the study of additional 4th century texts may provide clarity. Even without certainty of its absence in the spoken language of the time the lack of GUN in *Peregrinatio* suggests that change is afoot.

The GUN conflict sheds light on some weakness of the PCM in historical analysis. Without native speakers there is often no way of saying with certainty that a parameter is absent from a language. Although stop questions provide certainty for some parameters, they become largely irrelevant when

competing grammars are considered. If two grammars are at play in a speaker's language faculty contradictory parameters may co-exist, as may be the case of *St. Benedict's Rule*, and so stop questions cannot be taken as gospel. Ultimately, the parametric analysis of ancient languages from textual data has a higher degree of uncertainty than the parametric analysis of modern languages. This is simply inevitable.

This study has shown that parametric analysis from textual data alone is entirely possible. This opens up the possibility of a systematic study of the syntax of many ancient languages. From this point it will be possible to determine the proximity of relation between various ancient languages by calculating the distance between them. It will also be possible to determine the distance between many ancient languages and their descendants. Doing so may mathematically reinforce the phylogenetic relations proposed by the comparative method or highlight inaccuracies in this method. Furthermore, parametric comparison of ancient languages and their descendants will provide clarity on when the descendants split from their parent language. In terms of Romance, parametric comparison of Latin, Old Romance, and modern Romance will provide insight into the rate at which syntactic change occurred, where it originated and how it propagated.

Appendix

Table 3: summary of parameter settings for *Satyricon* and *Peregrinatio Egeriae* Table 3: summary of parameter settings for *Satyricon* and *Peregrinatio Egeriae*

Parameter name	Acronym	Satyricon	Peregrinatio
Grammaticalized morphology	FGM	+	+
Grammaticalized agreement	FGA	+	+
Grammatical Case	FGK	+	+
Grammatical (ultra-)spatial Cases	SPK	-	-
Grammatical person	FGP	+	+
Semantic person	FSP	0	0
Grammaticalized number	FGN	+	+
Spread collective number	SCO	0	0
Grammaticalized distributive plurality	GDP	0	0
Number spread to N	FSN	+	+
Number on N	FNN	+	+
Grammaticalized temporality	FGT	-	-
Grammaticalized gender	FGG	+	+
Semantic gender	FSG	+	+
Unbounded sg N	CGB	-	-
Grammaticalized perception	FPC	-	-
Grammaticalized Specified Quantity	DGR	-	-
Grammaticalized text anaphora	DGP	-	-
Weak Specified Quantity	CGR	0	0
Weak person	NWD	0	0
Variable person	FVP	0	0
Grammaticalized distality	DGD	0	0
Free null partitive Q	DPQ	-	-
Article-checking N	DCN	0	0
Null N-licensing art	DNN	0	0
D-controlled inflection on N	DIN	-	-
Grammaticalized classifier	FGC	0	0
General classifier	FGE	0	0
Person spread to predicate nouns	FCN	-	-
NP-heading modifier	HMP	-	-
Free reduced relatives	ARR	+	+
Head-marking	GCN	-	-
Person controlled marking	GFN	0	0
Agreement with all pronouns	GFP	0	0
Agreement with all 3rdPers DPs	GP3	0	0
Genitive inversion	GEI	0	0
Full c-selection	CSE	+	+
Ergative alignment	EAL	-	-

Clausal alignment	CAL	-	-
Argument linker	LKA	-	-
Oblique linker	LKO	-	-
Predicative linker	LKP	-	-
Def matching pronominal possessives	DMP	0	0
Def matching genitives	DMG	0	0
Uniform genitive	GUN	+	-
Free genitive	GAD	0	-
GenL	GFL	0	+
Partial GenL	PGL	0	0
Generalised GenH	GGH	0	0
Grammaticalized inalienability	GSI	-	-
Inalienable possession	ALP	-	-
Genitive licensing iteration	GIT	-	-
Unstructured modifiers	UST	-	-
Gender polarity cardinals	GPC	-	-
Plural spread through cardinal quantifiers	PSC	+	+
Plural spread through cardinal adjectives	PCA	0	0
Person marking on numerals	PMN	0	0
Head marking on relative clauses	RHM	-	-
Finite relative clauses	FRC	+	+
Participle relative clauses	NRC	-	-
Def on relatives	DOR	0	0
Feature spread to particles	FFP	0	-
NP under non-genitive arguments	NUP	-	-
Complement under P	PNP	+	+
NP under D	NUD	+	+
N under cardinals	NUC	+	+
N under M1 As	NM1	+	+
Fronted high As	EAF	0	0
N under M2 As	NM2	+	-
N under As	NUA	+	0
N under GenL	NGL	-	0
Class MOD	ACM	0	0
Def spread to N	DSN	0	0
Def spread to ARR	DSA	0	0
Def spread to structural categories	DSS	0	0
Def on cardinals	DOC	0	0
Proper names in D	NEX	0	0
Personal proper names in D	PEX	0	0
Partial proper names in D	FEX	0	0
D-checking possessives	PDC	0	0

Clitic possessives	PCL	-	-
Adjectival possessives	APO	+	+
Wackernagel possessives	WAP	0	0
Adjectival genitives	AGE	-	-
Null possessive licensing article with kinship nouns	OPK	0	0
Split deictic demonstratives	TSP	0	0
Split demonstratives	TDP	0	0
D-checking demonstratives	TDC	0	0
Unstructured demonstratives (adjectival)	TSA	0	0
Unstructured demonstratives	TAR	+	+
Dem fronting to Loc	TLC	+	+
Long distance D-checking demonstratives	TND	0	0
Split def on adjectival demonstratives	TDA	0	0
DP under Loc	TNL	+	+

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