

*CELERITAS CAESARIANA*  
REPUTATION, REPRESENTATION AND REALITY

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Bart Danon, March 2017

## SUMMARY

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Julius Caesar had a demonstrable reputation for *celeritas*, to the extent that Cicero in one of his letters added the epithet *Caesariana* to *celeritas* when describing another general's swiftness. This reputation can be further traced in various other ancient sources, such as Suetonius' biography on Caesar and Velleius Paterculus' history of Rome. Two potential bases for a Roman general's reputation to possess a particular virtue can be identified, i.e. representation and reality. In this study, these two bases are examined in detail for Caesar's reputation for *celeritas*. The first part of this study focusses on the representation aspect and constitutes a statistical frequency study of words that explicitly indicate swiftness of military movements. For the second part, in which the reality component is assessed, legionary marching speeds are reconstructed (using Monte Carlo calculations) based on information supplied in the ancient sources. The results are assessed both intratextually (comparing Romans and their enemies within texts) and intertextually (comparing various Roman generals described in different texts). For data on Caesar the focus is on the first seven books of the *De Bello Gallico*, while for the data on the other Roman generals Sallustius' *Iugurtha* and a corpus of Cicero's letters on his Cilician campaign are included. The representation study shows that Caesar in the *De Bello Gallico* significantly more frequently refers to his own *celeritas*, both as compared to his enemies and as compared to the generals described by the other authors. Moreover, from a methodological point of view, it is concluded that a statistical frequency study should be based on the contextual meanings of words and not just on word forms. The results of the reality study point less unequivocally to Caesar being demonstrably more swift as compared to the other generals; the reconstructed marching speeds for all generals cover more or less similar ranges. However, the estimated probabilities for the marching speeds suggest that their values are considerably lower as compared to the widely applied values Vegetius mentions in his *Epitoma de rei militari*. Considering the results of the two parts together, the hypothesis that Caesar's reputation for *celeritas* was for a considerable part based on the emphasis on his own *celeritas* in the *De Bello Gallico*, can thus be validated.

## OPSOMMING

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Julius Caesar het 'n bewysbare reputasie vir *celeritas* gehad, tot so 'n mate dat Cicero in een van sy briewe die epiteton *Caesariana* by *celeritas* gevoeg het om 'n ander generaal se snelheid te beskryf. Hierdie reputasie kan verder in verskeie ander antieke bronne nagespeur word, soos in Suetonius se biografie oor Caesar en Velleius Paterculus se geskiedenis van Rome. Daar kan twee potensieële grondslae geïdentifiseer word vir 'n Romeinse generaal se reputasie dat hy 'n sekere deug besit, naamlik uitbeelding en realiteit. Die twee grondslae word in hierdie studie volledig ondersoek met die oog op Caesar se reputasie vir *celeritas*. 'n Eerste onderafdeling van die studie fokus op die uitbeelding-aspek en berus op 'n statistiese frekwensiestudie van woorde wat eksplisiet die snelheid van militêre bewegings aandui. In 'n tweede onderafdeling, wat die realiteit-komponent evalueer, word die marsjeersnelheid van die legioene gerekonstrueer (deur middel van Monte Carlo-berekeninge) gebaseer op inligting uit die antieke bronne. Die resultate word sowel intratekstueel (deur die Romeine en hulle vyande binne dieselfde tekste te vergelyk) as intertekstueel (deur verskeie Romeinse generaals wat in verskillende tekste beskryf word, te vergelyk) ontleed. Vir data oor Caesar is die fokus op die eerste sewe boeke van die *De Bello Gallico*, terwyl data oor die ander Romeinse generaals uit Sallustius se *Iugurtha* en 'n korpus van Cicero se briewe oor sy Silisiese veldtog verkry word. Die uitbeeldingstudie wys dat Caesar in die *De Bello Gallico* beduidend meer gereeld verwys na sy eie *celeritas*, sowel in vergelyking met sy vyande as in vergelyking met die ander generaals soos beskryf deur ander skrywers. Verder kan daar vanuit 'n metodologiese oogpunt afgelei word dat 'n statistiese frekwensiestudie gebaseer moet word op die kontekstuele betekenis van woorde en nie net op woordvorme nie. Die resultate van die realiteitstudie dui minder onmiskenbaar daarop dat Caesar bewysbaar vinniger as die ander generaals is; die gerekonstrueerde marsjeersnelhede van die onderskeie generaals het min of meer dieselfde omvang. Die geskatte waarskynlikhede vir die marsjeersnelhede dui daarop dat hulle waardes aansienlik laer is as die wyd toegepaste waardes wat Vegetius in sy *Epitoma de rei militari* noem. As die resultate van die twee onderafdelings saam oorweeg word, kan die hipotese bevestig word dat Caesar se reputasie vir *celeritas* tot 'n groot mate gebaseer is op die beklemtoning van sy eie *celeritas* in die *De Bello Gallico*.

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## CONTENTS

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SUMMARY	
OPSOMMING	
ACKNOWLEDGEMENTS	
1 INTRODUCTION	1
2 METHODOLOGY	4
3 REPUTATION	8
3.1 Methodology . . . . .	8
3.2 Results . . . . .	8
3.3 Conclusions . . . . .	11
4 REPRESENTATION	12
4.1 Methodology . . . . .	12
4.2 Results . . . . .	18
4.3 Conclusions . . . . .	21
5 REALITY	22
5.1 Methodology . . . . .	22
5.2 Results . . . . .	37
5.3 Conclusions . . . . .	43
6 CONCLUSIONS	44
APPENDICES	
A WORD FREQUENCIES	46
B INSTANCES OF <i>VIGILIA</i>	65
C INSTANCES OF <i>HORA</i>	66
D INSTANCES OF <i>PASSUS</i>	67
E MULTI-HOUR MARCHES	70
F MULTI-DAY MARCHES	83
BIBLIOGRAPHY	104



## INTRODUCTION

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Gaius Julius Caesar was very successful both as a military commander and as an author. Regarding his military success, for example, he subjugated most of *Gallia Comata* (Longhaired Gaul), which coincides roughly with modern France and Belgium, in the astonishingly short timespan of eight years only. Regarding his literary success, it suffices to note that the series of meticulous reports on his military campaigns, the so-called *commentarii* (commentaries), have been preserved, read and studied for over two millennia.<sup>1</sup> It seems that the symbiosis between the general and the author has amplified both Caesar's success and fame.<sup>2</sup> Indeed, Caesar's success did not remain unnoticed in his own day either; three times he received a *supplicatio* (thanksgiving) for his achievements in Gaul.<sup>3</sup> One of the consequences of his fame was that certain Roman (stock) values were attributed to, and sometimes even exclusively associated with, Caesar. The most well-known of these acclaimed virtues of Caesar were his *clementia* (clemency) or *celeritas* (swiftness). The present study will focus on Caesar's *celeritas*.

Murphy (1977, 242-243)<sup>4</sup> propounds that in the ancient world there were several cardinal virtues, an observation which he bases on Cicero's treatise *De Officiis*.<sup>5</sup> In this text, Cicero (*Off.* 1.46-58)<sup>6</sup> enumerates the virtues of a man suitable for office, which are *modestia* (modesty), *temperantia* (temperance), *iustitia* (justness) and *fortitudo* (valour). It is noted that *celeritas* is not among

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- 1 Of these commentaries, the *De Bello Gallico* and *De Bello Civile* are generally recognized as written by Caesar himself (except for the eighth book of the *De Bello Gallico*, which was written by Caesar's lieutenant Hirtius), while the authorship of the subsequent *De Bello Alexandrino*, *De Bello Africo* and *De Bello Hispaniensi* remains uncertain (sometimes indicated as pseudo-Caesar).
  - 2 See for example Riggsby 2006 or Osgood 2009.
  - 3 *Caes. Gal.* 2.35, 4.38 and 7.90. Caesar (*Gal.* 2.35) does not refrain from noting that these *supplicationes* were longer (15 days and twice 20 days, respectively) than all those decreed before him; see also Kraner et al. 1968, 240.
  - 4 In this thesis I've included references in the text itself when the name of the author is already part of the text, otherwise the reference is added as a footnote.
  - 5 Murphy (1977, 242, n. 43) also mentions Plato (*Resp.* 427E-448E). In this work the listed virtues differ slightly from Cicero's. The focus here is, however, on Cicero, since he is a contemporary of Caesar.
  - 6 In this thesis I use the abbreviations of the Oxford Latin Dictionary (2012 edition) for the Latin authors and their works. For Roman proper names I use the original Latin version in the nominative case, because I envision a uniform referencing system for ancient names across modern languages. Thus, I write e.g. Pompeius and not Pompey.

these cardinal virtues. But, in his peroration *Pro Lege Manilia*,<sup>7</sup> where he tries to convince the Senate to appoint Pompeius as the commander-in-chief for the Third Mithridatic War, Cicero enumerates the virtues of a good general specifically.

*Neque enim illae sunt solae virtutes imperatoriae, quae vulgo existimantur, labor in negotiis, fortitudo in periculis, industria in agendo, celeritas in conficiendo, consilium in providendo, quae tanta sunt in hoc uno, quanta in omnibus reliquis imperatoribus, quos aut vidimus aut audivimus, non fuerunt.*

For the virtues of a [good] general are not just those which are commonly assumed, [but also] industry in business, valour in dangers, vigour in action, swiftness in execution, insight in planning, [and] these are to such an extent present in this one [general], as they are not in all the other generals [combined], who we either saw or heard of.

(Cic. *Leg. Man.* 29)<sup>8</sup>

Among these *virtutes imperatoriae* (virtues of a [good] general) is *celeritas in conficiendo* (swiftness in execution). Moreover, later in the same peroration, Cicero links Pompeius' *celeritas in conficiendo* to one of Murphy's cardinal virtues, viz. *temperantia* (temperance); Pompeius refrains from temptations of (personal) pleasures, which otherwise would slow him down.<sup>9</sup> Therefore, although *celeritas* was not one of the cardinal virtues as defined by Murphy, it can be concluded that *celeritas* was closely related to them and more specifically an important virtue for a general.

This study aims to assess the extent and bases of Caesar's acclaimed reputation for *celeritas*. Two potential bases for the establishment of a reputation have been identified, i.e. reality and representation. In the case of *celeritas*, for example, one can gain a reputation either by being swift or by convincingly presenting oneself as swift. Yavetz (1983, 219-225) indeed discusses various phenomena that could (both positively or negatively) influence one's *existimatio* (reputation) in the Late Republic, which include the behaviour of staff, rumours, influential friends or patrons, but also writings of e.g. poets or (court) historians. Considering these two bases, the interaction model as depicted in Figure 1 can be constructed for the reputed virtue of a Roman general. It is thus assumed that all three components (reputation, representation and reality) interact with each other. For example, the representation (by others) of a general showing a specific virtue will depend on his actual actions, but also on his reputation. It is likewise conceivable that a general adjusts his actions to conform to a (desired) reputation, and so forth.

7 Also known as the *De imperio Cn. Pompeii*.

8 All translations of Latin texts are my own. For the ancient Greek sources I rely on the translations of the Loeb Classical Library; see Bibliography for more details.

9 Cic. *Leg. Man.* 40.



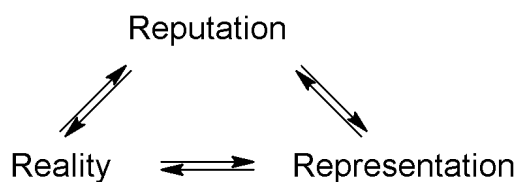


Figure 1: Interaction model for the reputation for a virtue.

The main objective of this study can therefore be reformulated in the following research questions. Did Caesar have a demonstrable reputation for *celeritas*? If so, did he attain this reputation because he really was swift or because he successfully presented himself as being swift? Or is it a combination of the two? It is hypothesised that the representational aspect contributed significantly to his reputation for *celeritas*.<sup>10</sup>

In order to be able to formulate answers to these research questions, the present study is subdivided threefold. The objectives of the three parts are (1) to assess Caesar's reputation for *celeritas*, (2) to investigate if Caesar demonstrably represented himself as swift in his commentaries and (3) to investigate if Caesar actually was demonstrably swift. The structure of the remainder of this thesis broadly follows this subdivision. The overall methodology of the study and a further assessment of the meaning of *celeritas* is presented in Chapter 2. In Chapter 3 the evaluation of Caesar's reputation for *celeritas* is assessed using both contemporary and later ancient sources. Chapter 4 and 5 constitute the studies on the representation and reality components, respectively. Finally, Chapter 6 presents the synergy of all the results, as well as the main conclusions and recommendations for further study.

10 Yavetz (1983, 218-225) propounds that the *existimatio* (reputation) for a Roman politician in the Late Republic was as dependent on public opinion and perceptions as are the images of modern politicians. Also Rambaud (1953, 254), after assessing all occurrences in the commentaries where Caesar refers to his own swiftness, concludes that Caesar is using them to showcase one of his principal military qualities, i.e. *celeritas*.

## 2

## METHODOLOGY

In this chapter the overall methodology of the study is presented, while each of the following three chapters includes a section where the specific methodology for that chapter is discussed. The overall methodology will mainly encompass the approach of how the three different parts, which are focusing on the three components of the previously introduced interaction model (reputation, representation and reality), are combined. Also, the selection of the texts used in this study is elucidated. However, it is firstly required to assess in greater detail what *celeritas* actually entailed in the Late Republic.

Seiffert (2012, 108-109), studying selected passages from the *De Bello Gallico*, recognizes three levels of *celeritas*, which are (1) swiftness in thinking, (2) swiftness in acting and (3) swiftness in writing style. Of these three levels, the first two relate to both the reality and representation components, while the latter only refers to a form of representation.

To start with the latter, Caesar employs various techniques in his commentaries to stress his own *celeritas*, which also include a swift or condensed writing style (also referred to as *brevitas*). Indeed, the *brevitas* of Caesar's commentaries was already acknowledged in his own day.<sup>11</sup> It constitutes for example the use of asyndeta or the use of relatively concise wording for prolonged events. Within the structure of this study, *brevitas* forms part of the representation component, and is therefore discussed further in that context (see Chapter 4).

The dividing line between swiftness in acting and thinking is thinner. Swiftness in thinking can (among others) become evident in the making of fast decisions. For example, Stadter (1993, 220), analysing an incident where Caesar outmanoeuvred the Pompeians during the Civil War, concludes that Caesar achieved this by making swift decisions; when the same information reached both camps, the Pompeians needed to deliberate on what to do next, while Caesar immediately proceeded to action. Similarly, Caesar (*Gal.* 4.38) sent his lieutenant Labienus *postero die* (the next day) to deal with the Morini, who attacked some of the legionaries returning from Britain. Kraner et al. (1968, 344) comment that this was an exceptionally fast response and thus a good example of Caesar's *celeritas*. However, both examples can also be understood as swiftness of acting, since in both cases the swift decision led to (immediate) action. As the ancient sources are predominantly concerned with events (and to a lesser extent with contemplations), swiftness in acting

<sup>11</sup> See for example Cic. *Brut.* 262.

is the most evident level of *celeritas*.

This study thus focusses on the swiftness in acting aspect of *celeritas* only, for the following reasons. Rambaud (1953, 251-254) lists, in the section which he calls *celeritas*, all the occurrences in the *De Bello Gallico* and *De Bello Civile* where Caesar refers to his own swiftness. The categories he includes are Caesar's personal travels, the marches of the legions, the levying of new troops and some particularly swift attacks. All of these categories refer to swiftness in acting (as opposed to swiftness in thinking). The short timespan of e.g. a fast decision (which could be made in a split second), in combination with the relatively coarse chronological detail of our existing evidence material, makes potential reconstructions of swiftness in thinking difficult and scarce. Moreover, when Cicero (*Leg. Man.* 29) lists the virtues of a good general, he explicitly uses the construction *celeritas in conficiendo* (swiftness in execution), thus underlining the relation to swiftness in acting. The focus of this examination of *celeritas* is therefore on swiftness in acting exclusively.

Among the different actions that can be swift (see for example the list of Rambaud above), this study will focus on marches. There are two reasons for this, first of which is that Cicero mentions the term *celeritas Caesariana* in one of his letters explicitly, while he is referring to Antonius marching with an army.<sup>12</sup> Secondly, of all the categories mentioned by Rambaud, the marching speed of the legions is the most promising category for reconstructions for the reality component.

The approaches of the three parts of this study can be reformulated thusly. The reputation study will focus on generalizing references in other ancient texts (both contemporary to Caesar as well as later sources) to Caesar's swiftness of marching. For the representation study Caesar's commentaries are evaluated for frequencies of references to swiftness of military movements. Finally, for the reality study, marching speeds are calculated based on selected passages from the commentaries, which supply all the required information regarding marching durations and distances.<sup>13</sup> More detailed methodologies for the three parts are presented in the respective chapters.

The results of the two latter studies are furthermore assessed both intratextually and intertextually. The intratextual evaluation is only applied to the representation study and compares the frequencies of references to swift military movements for the Romans with those for their enemies.<sup>14</sup> Thus, it can be assessed to what extent Caesar presented himself as swift as compared to his enemies. However, a comparison of Caesar's achievements with con-

12 Cic. *Att.* 16.10. For more details see Chapter 3.

13 Remarkably, no quantified speeds (in the appearance of a numeral with a distance-per-time unit) are ever mentioned in the investigated sources.

14 None of the texts supply sufficient details on the movements of the enemy troops in order to be able to calculate marching speeds and thus perform an intratextual comparison for the reality component.

temporary Roman generals is a fairer, and by that the more important, comparison. Therefore, intertextual comparisons are also included for both the representation and reality studies. For this purpose, the results of Caesar's commentaries are compared with the results of two other texts: Sallustius' *Iugurtha* and a selection of Cicero's letters on his Cilician campaign. These two authors were chosen because they were both contemporaries of Caesar, thus it can be assumed that they shared (for the most part) the same framework of norms and values as Caesar did.<sup>15</sup> Using the intertextual comparisons, the results from Caesar can thus be calibrated to those of his contemporaries.

Finally, before turning to the more detailed methodologies and results, the selection of the investigated texts for the representation and reality studies is considered. While the integral *Iugurtha* is used for both studies, specific corpora were selected from the writings of Caesar and Cicero.

For Caesar, the focus is on the first seven books of the *De Bello Gallico* only. The eighth book is omitted from the study since it is written by Aulus Hirtius and not by Caesar himself.<sup>16</sup> Due to Hirtius' authorship, especially the representation component could be different from Caesar's own way of presenting himself. Secondly, the *De Bello Civile* is also excluded, due to its different objective as compared to the *De Bello Gallico*. The alleged objective of the commentaries has been hotly debated. While some believe the commentaries were pure political propaganda,<sup>17</sup> others are convinced that the political aspect has been grossly exaggerated.<sup>18</sup> However, all agree that Caesar presented himself in the best possible way.<sup>19</sup> The complete picture seems thus to be more nuanced. Collins (1972) concludes that the objectives of the *De Bello Gallico* and *De Bello Civile* were distinctly different; whereas the *De Bello Gallico* was written mostly to aggrandize Caesar, the *De Bello Civile* was meant to justify Caesar's actions in the civil strife. As I follow Collins, it is expected that due to these differences in objectives, the results for the representation component for the *De Bello Gallico* and *De Bello Civile* will also differ significantly. Therefore, this study will focus on the *De Bello Gallico* only.<sup>20</sup>

15 There are of course also differences between the texts, for example both Caesar and Cicero wrote about their own military endeavours, while Sallustius did not. And it is noted that all texts are from different literary genres (commentaries, historiography and epistolography, for Caesar, Sallustius and Cicero, respectively). These differences will be considered further in the discussion of the results.

16 Caes. *Gal.* 8.0.

17 See for example Stevens 1952.

18 See for example DeWitt 1942.

19 This hypothesis is meticulously elaborated by Rambaud 1953, but see also Martin 1965, 67 and Riggsby 2006, especially 207-214.

20 For the present study the Oxford Classical Text of the *De Bello Gallico* of Du Pontet (1900) has been taken as authoritative. For the other Latin (and Greek) texts the Loeb editions are used (where available); see Bibliography for more details.

With regard to the letters of Cicero, the selection of the corpus is more complicated, and different approaches for the representation and reality sub-studies are applied. For the representation study only those letters are considered of which the main purpose is to recount the events of Cicero's military endeavours in Cilicia. To include all letters written during Cicero's governorship would otherwise unnecessarily distort the statistical data. This corpus then consists of Cic. *Fam.* 15.1, 15.2, 2.10, 15.4,<sup>21</sup> and Cic. *Att.* 5.18 and 5.20.<sup>22</sup> It is noted that although these letters also include digressions on other matters, they are included in their entirety. For the calculation of the marching speeds, information from any of Cicero's letters may be used.

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21 Written to the Senate, the Senate, Caelius (an aedile) and Cato, respectively.

22 The chronological order of the letters is Cic. *Fam.* 15.1, *Att.* 5.18, *Fam.* 15.2, 2.10, *Att.* 5.20 and *Fam.* 15.4.

## 3

## REPUTATION

In this chapter references to Caesar's *celeritas* by other authors, both during his own time and in later antiquity, are presented in order to assess the extent of his reputation for *celeritas*.

## 3.1 METHODOLOGY

In order to support the argument that Caesar did, in fact, have a reputation for *celeritas*, a wide variety of ancient texts is investigated. Apart from the two ancient biographies by Plutarchus and Suetonius, these texts also include other genres, i.e. epistolography and historiography. Only the instances that constitute a generalised statement regarding Caesar's *celeritas* (and thus pertain to a reputation) are included, as opposed to instances where examples or specific occasions of *celeritas* are referred to. More specifically, expressions such as 'Caesar quickly marched to Rome' are not considered, the focus is on expressions such as 'Caesar normally marched quickly'. The following results are organised per author and arranged chronologically.

## 3.2 RESULTS

*M. Tullius Cicero*

As Caesar's direct contemporary, Cicero is a very important source of information on Caesar. Moreover, since they both worked and moved around in the same political arena, it can be assumed that they also shared a system of norms and values. Apart from Cicero's treatises, the enormous corpus of letters is especially interesting, since they constitute correspondences with and about many of the people actively involved in Roman politics during the middle of the first century BCE. In these letters there are three instances where Cicero refers to Caesar's reputation for *celeritas*.

Early February 49 BCE, in the middle of the civil strife between Caesar and Pompeius, Cicero writes to Atticus stating how Italy is mostly in Caesar's possession and that Pompeius is close to being caught by him.<sup>23</sup> Cicero's exclamation in this passage stresses his idea of how exceptional Caesar's *celeritas* was. This instance is even more notable since Caesar is contrasted with Pompeius, whose *celeritas* in 66 BCE was an argument for Cicero to put Pom-

<sup>23</sup> Cic. *Att.* 7.22.

peius in command of the Third Mithridatic War.<sup>24</sup> It is also noted that Cicero at this point in time was not supporting Caesar's side in the conflict.<sup>25</sup>

*Pedem in Italia video esse nullum qui non in istius potestate sit. de Pompeio scio nihil, eumque, nisi in navim se contulerit, exceptum iri puto. o celeritatem incredibilem!*

I see that there is no foot [of ground] in Italy which is not in his [Caesar's] power. I know nothing about Pompeius and I think that, if he hasn't boarded a ship [yet], he will be caught. What incredible swiftness!

(Cic. *Att.* 7.22)

The second example stems from a letter written during the same conflict, just a month later. Caesar is marching towards Brundisium and Cicero again notes how quickly Caesar tends to march. Furthermore, this instance also emphasises again how *celeritas* refers to a marching speed; note the use of the verb *ambulo* (to march) and the *militum celeritas* (the swiftness of the soldiers).

*eo modo autem ambulat Caesar et iis diariis militum celeritatem incitat ut timeam ne citius ad Brundisium quam opus sit accesserit.*

Caesar however marches in such way and incites the swiftness of his soldiers with such [large] rations, that I fear he will arrive at Brundisium quicker than may be convenient [for us].

(Cic. *Att.* 8.14)

In the final example, Cicero attributes *celeritas* even more explicitly to Caesar. As a matter of fact, in this letter Cicero coins the term *celeritas Caesariana*. Cicero is travelling to Rome in November 44 BCE (after Caesar's death), approaching from the south, while trying to avoid Antonius, who is marching an army from southern Italy towards Rome.<sup>26</sup> Note that the term *celeritas* is actually used to refer to another general, i.e. Antonius, but by adding the epithet *Caesariana* it is linked to Caesar. The fact that Cicero uses the term *celeritas Caesariana* for another general underlines the fact that Caesar's reputation for *celeritas* was paramount at the time.

24 Cic. *Leg. Man.* 29; see also Chapter 1. This same observation goes for the next instance discussed.

25 Cic. *Att.* 7.21.

26 Cicero writes in an earlier letter (*Att.* 16.8) that *Antonium cum legione Alaudarum ad urbem pergere* (Antonius is making for Rome with the legion Alauda).

*itaque mutavi consilium; statueram enim recta Appia Romam. facile me ille esset adsecutus; aiunt enim eum Caesari<a>na uti celeritate.*<sup>27</sup>

Thus I changed my plan; for I had decided to go to Rome directly along the Via Appia. He would have easily followed me; for they say that he uses Caesarean swiftness.

(Cic. *Att.* 16.10)

#### *M. Velleius Paterculus*

Early in the first century CE, Paterculus compiled his general history of Rome. In the second book he discusses the events of the civil wars and adds short descriptions of some of the main actors, among whom Caesar. It is assumed here that the comparison with Alexander the Great must be understood as a compliment. Note also how *celeritas* is again linked with temperance (by the subordinate clause 'for [Caesar] always only used both food and sleep to live'), as it was linked by Cicero.<sup>28</sup>

*magnitudine cogitationum, celeritate bellandi, patientia periculorum Magno illi Alexandro, sed sobrio neque iracundo simillimus, qui denique semper et cibo et somno in vitam, non in voluptatem uteretur.*

With regard to the greatness of his thinking, the swiftness of his waging war, and his endurance of dangers, [Caesar] very much resembled the Great Alexander (if he [Alexander] wasn't drunk or furious, for [Caesar] always only used both food and sleep to live, not for enjoyment).

(Vell. 2.41)

#### *L. Mestrius Plutarchus*

Interestingly, in the biography of Plutarchus no generalizing references to a reputation for *celeritas* for Caesar were found. This is even more striking, since Plutarchus wrote comparative biographies, pairing Caesar with Alexander the Great. Considering Paterculus' comparison between Caesar and Alexander, one could have expected at least a reference to *celeritas* in Plutarchus' biographies and comparison of the two. There are but three locations where Plutarchus mentions swift deeds of Caesar, but these are not generalizing and therefore not referring to a reputation for *celeritas*.<sup>29</sup>

The fact that Plutarchus does not refer to a reputation for *celeritas* may possibly be due to the source material Plutarchus used. It has been convincingly argued that he did not solely rely on Caesar's writings for the composition of his biography (as many other authors seem to have done concerning Caesar),

<sup>27</sup> Some editions have *Caesarina* instead of *Caesariana*; in this thesis the more widely accepted *Caesariana* is adopted.

<sup>28</sup> Cic. *Leg. Man.* 40.

<sup>29</sup> Plut. *Caes.* 17.5, 24.4 and 50.3.



but that he also used Asinius Pollio's history,<sup>30</sup> which is known to be more critical towards Caesar.<sup>31</sup>

### C. Suetonius Tranquillus

Finally, the biography of Suetonius is considered. Although his reference to Caesar's reputation is very explicit, it is not so explicitly pertaining to marching armies, but rather to his personal travels. At the same time, however, the context does give the statement a military flavour.

*Armorum et equitandi peritissimus, laboris ultra fidem patiens erat. In agmine nonnumquam equo, saepius pedibus anteibat, capite detecto, seu sol seu imber esset; longissimas vias incredibili celeritate confecit, expeditus, meritoria raeda, centena passuum milia in singulos dies; si flumina morarentur, nando traiciens vel innixus inflatis utribus, ut persaepe nuntios de se praeveniret.*

[Caesar] was extremely skilled in arms and horseback riding and had incredible endurance in labour. He led the military column sometimes on horse, but more often on foot, with uncovered head, be it sun or rain; he completed very long roads with incredible swiftness, lightly packed, in rental carts, a hundred miles each day; if rivers delayed him, he crossed them swimming or making use of inflated skins, such that he would often arrive before the news [of his arrival].

(Suet. *Iul.* 57)

### 3.3 CONCLUSIONS

It can be concluded that Caesar had, from his own time on, a distinct reputation for *celeritas*. The explicit references to this reputation in Cicero's letters, Paterculus' history and Suetonius' biography substantiate this conclusion. Moreover, some of these instances further corroborated the assumption that Caesar's reputation for *celeritas* mostly pertains to swift travels and in some cases even specifically to swift marching of the legions. Remarkably, no references to a reputation for *celeritas* is found in Plutarchus' biography.

<sup>30</sup> Pelling 1984. Pollio's history has not come down to us.

<sup>31</sup> For the critical tone of Pollio's history see for example Suet. *Iul.* 56.

## 4

## REPRESENTATION

This chapter explores the representational aspect of Caesar's reputation for *celeritas*. A statistical study is performed on the frequencies of references to *celeritas* in Caesar's *De Bello Gallico* as well as in Sallustius' *Iugurtha* and Cicero's letters on his military campaign in Cilicia. The focus is on references to swift military movements. Firstly, a detailed methodology is presented. Secondly, the results are presented, which are subsequently analysed both intratextually and intertextually.

## 4.1 METHODOLOGY

In the first place, a subdivision may be made between implicit and explicit references to swiftness. Implicit references to swiftness include phenomena like choice of words or writing style, and include for example the use of asyndeta, condensed wording (in short *brevitas*),<sup>32</sup> or the use of *Gestalt*.<sup>33</sup> Although these implicit references contribute to the reader's (sub)conscious perception of and association with *celeritas*, it is difficult to demonstrate that this was indeed the (sole) purpose of such references.<sup>34</sup> The focus in this study is therefore on explicit references to *celeritas* only. Explicit references constitute words or phrases<sup>35</sup> that semantically express swiftness.

A compendium of all Latin lemmata which indicate swiftness has been compiled. Note for example that the lemma *celer* includes the entire word family: the adjective *celer*, the noun *celeritas* and the adverb *celeriter*. Denooz (2007) performed a similar statistical study, focusing entirely on just this word family.<sup>36</sup> There are however many other lemmata which also indicate swiftness explicitly.<sup>37</sup> Moreover, the current compendium also includes verbs which express swiftness, such as *festino* (to hurry). Finally, apart from single words, there are also certain phrases that can indicate swiftness. For

32 Seiffert 2012, 116-123.

33 Batstone 1991. A *Gestalt* is a recurring pattern of narrative elements whose combination conveys a message by association, accumulation and/or implication.

34 Seiffert (2012, 120) also acknowledges that the choice of how extensively different events of a narrative are described is highly subjective. See also Riggsby's (2006, 8) proposed alternative interpretation of implicit references to *celeritas*.

35 Phrase here is used as the linguistic term for a grammatical unit. An example of such a phrase is a noun phrase (e.g. 'the fast march').

36 Denooz (2007, 44) more specifically confined himself to the words *celeriter* and *celeritas*.

37 Seiffert (2012, 111-113) discusses a few other lemmata as well.

example, the noun phrase *itineribus magnis* (with long marches) occurs recurrently. These phrases are also included in this study. Naturally, all grammatical forms of the lemmata have been considered, including all cases and the comparatives and superlatives of the adjectives and adverbs.

In Table 1 the compendium of the lemmata used in this study is presented, including the most relevant gloss(es) from the Oxford Latin Dictionary (hereafter OLD).<sup>38</sup> It is noted that some of these words can have alternative meanings, which do not pertain directly to swiftness. For example, *maturus* is predominantly used in the meaning of 'ripe' or 'full-grown', and only incidentally as meaning 'swift'. In order to exclude the occurrences of the selected lemmata when they have these other meanings, the contexts of all occurrences will be studied in detail.

It is further noted that the three nouns, *iter* (march), *gradus* (step) and *cursus* (speed), require an adjective to make the meaning of the constituted noun phrase pertain to swiftness. The recurrent phrase *magnis itineribus* (with long marches) can exemplify such constituted noun phrase indicating swiftness explicitly. Only those occurrences, of which these nouns together with their accompanying adjectives indicate swiftness, have been included.

Regarding the verbs, it must be noted that all four verbs have various other meanings, apart from those listed in Table 1. As a tool for selecting the relevant occurrences of these verbs for this study, the notion of predicate frame is employed.<sup>39</sup> A predicate frame constitutes the framework (and thus meaning) of the predicate (i.e. the verb) and dictates the number and type of required auxiliaries (i.e. arguments), which must accompany the verb within that respective predicate frame. Different predicate frames require different (numbers of) arguments, which is represented by its valency. For example, the most predominant predicate frame of the verb 'to give' is trivalent, with a subject, an object and an indirect object as the three arguments.

In Table 2 the predicate frames pertaining to swiftness for the four selected verbs are overviewed. These predicate frames are all intransitive (so no direct objects are required). Note that a directional argument indicates a word or phrase indicating a direction, for example, a place name in the accusative case, *Romam* (to Rome), a prepositional group with *in* or *ad* together with a location or person in the accusative case, or adverbs such as *eo* or *huc*. For the current study, it is important to note that the infinitive arguments need to constitute a verb which expresses movement; see also below. Finally, other predicate frames (and thus other lexical meanings of the verbs) are omitted from the study.<sup>40</sup>

38 For this study the 2012 edition of the OLD is used; see Bibliography for further details.

39 For a very elaborated discussion of the linguistic concept of predicate frame see Pinkster 2015, 19-22 and 71-229.

40 For example, the verb *contendo* is used frequently within a different predicate frame, requiring additional arguments and meaning 'to compete with'.

Table 1: Lemmata (and related words) which indicate swiftness explicitly, used in the statistical study.

<b>Lemma</b>	<b>Semantic domain</b>
<i>celer (celeriter, celere, celeritas)</i>	Moving swiftly, fast, speedy
<i>citus (cito)</i>	Moving or acting quickly
<i>contendo</i>	To go quickly, hasten, press forward
<i>cursus</i>	A speed, the act of running
<i>festino</i>	To go or come quickly, hasten, hurry
<i>gradus</i>	A pace, step
<i>iter</i>	A march
<i>maturo</i>	To come or go quickly, hurry
<i>maturus (mature, maturitas)</i>	Taking place with little delay, speedy, coming quickly
<i>ocior (ociter)</i>	Moving or acting at greater speed, swifter, more rapid
<i>propere</i>	To go quickly, hurry, hasten
<i>propereus (propere, properiter, properantia)</i>	Moving with haste, hurried
<i>quam primum</i>	As soon [as possible]
<i>rapidus (rapide, raptim, rapiditas)</i>	Swiftly moving, rapid, quick
<i>velox (velociter, velocitas)</i>	Rapid in movement, swift, speedy

Table 2: Predicate frames pertaining to swiftness of the selected verbs. Both the semantic as well as the syntactic forms of the arguments are presented, the latter in brackets. (\*) The syntactic appearance of the directional argument can have many different forms.

Valency	Argument 1	Argument 2	Meaning
Monovalent	subject (nominative)	-	To hurry
Bivalent	subject (nominative)	activity (infinitive)	To hurry (to)
Bivalent	subject (nominative)	directional (*)	To hurry (towards)

There is one group of lemmata, those that mean 'sudden(ly)', which can indicate a phenomenon that feels close to swiftness. These lemmata include for example *subitus*, *statim* or *confestim*. Denooz does not include them in his statistical calculations, although in the text passages he cites, he does show them in bold font.<sup>41</sup> However, although a sudden event can arise due to swiftness, it might as well arise due to e.g. revealing concealment or another type of unexpectedness. To distinguish between these meanings (or actually determining the underlying reason behind the meaning) is difficult and prone to subjectivity. These lemmata are therefore excluded from the compendium in order to keep the statistical calculation as objective as possible.

Then, using the compendium of lemmata as presented in Table 1, all occurrences of the selected lemmata are identified for the texts of the three authors (Caesar, Sallustius and Cicero). In order to do this, electronic versions of the texts have been used.<sup>42</sup> Subsequently, the selected text passages have been verified against critical editions.<sup>43</sup>

However, the frequencies of just these words would as such not lead to intelligible statistical results, as the contexts of the words can refer to many different situations. While Denooz (2012, 48-51) analyses several selected contexts in his study, he did not apply the inferences of those analyses to his statistical calculations. Therefore, in this study, a detailed assessment of the contexts in which the words occur is performed prior to the statistical calculations.

Firstly, the agent (mostly the subject) of the sentence, in which the selected words occur, is determined. In some cases the agent of the context is not a person, e.g. when *fama* (a rumour) or *ignis* (fire) is moving swiftly; these non-human instances are excluded. The human agents are then subdivided over two categories, i.e. *Romani* (the Romans) and *hostes* (the enemy). The latter category includes all the opponents of the Romans, for example, Gauls,

41 See Denooz 2007, 50.

42 Retrieved from [www.thelatinlibrary.com](http://www.thelatinlibrary.com) during March to November 2016.

43 For Caesar this was the Oxford Classical Text (Du Pontet, 1900), for Sallustius and Cicero the respective Loeb editions were used; see the Bibliography for more details.

Germans, Britons, Parthians, Numidians, etc. The former category includes all those who fight on the Roman side, thus, including (foreign, even Gallic) auxiliary troops, legates, other subordinate commanders or allied chieftains.

Next, there are three additional logical tests which are performed on the contexts of the selected words. These tests include distinctions between real and unreal, physical and mental, and stationary and mobile contexts, respectively. Firstly, a distinction is made between real and unreal contexts. An unreal context implies for example a wish, a possibility or a condition, whereas real contexts pertain to the factual events (that is, the events presented as factual by the author). An example of an unreal context can be found in *Caes. Gal. 3.28, arbitratus id bellum celeriter confici posse eo exercitum adduxit* ([Caesar], thinking that he could finish this war quickly, led his army there [to the Morini and Menapii]). In this specific example, Caesar was indeed wrong and, due to bad weather, he had to retreat.<sup>44</sup> Meanwhile, an example of a real context can be found in *Caes. Gal. 1.37, magnis itineribus ad Ariovistum contendit* ([Caesar] hurried with long marches towards Ariovistus). There is one borderline case which is the combination of the verb *iubeo* with an accusative and infinitive.<sup>45</sup> Of course there is no certainty that the orders were punctually followed. However, it seems to me that this is more a way of speech; I assume that when Caesar uses this construction, he tries to communicate 'this is what happened and it happened because I wanted it to happen like that'. Only the words which occur in real contexts are included in the statistical calculations.

Secondly, the context is assessed whether it pertains to a physical activity, as opposed to a mental activity. For example, in *Caes. Gal. 7.37, Celeriter adulescentibus et oratione magistratus et praemio deductis* (The young men were quickly convinced by both the speech and bribe of the magistrate), the context is a mental activity (to convince). Instances which are in such a context of mental activities are excluded.

Thirdly, the physical contexts must also relate to a movement. This excludes, for example, the following instance in *Caes. Gal. 7.17, celeriter quod habuerunt consumpserunt* ([the Romans] quickly consumed what [provisions] they had). However, this distinction is not always straightforward. For the following activities no (significant) involvement of movement is assumed and they are therefore excluded: taking up arms (e.g. *Caes. Gal. 3.28, 4.14, 5.26, 5.39*) and making general preparations for war (e.g. *Caes. Gal. 3.9, Sal. Iug. 86*). Meanwhile, the concentration of armies (e.g. *Caes. Gal. 4.37, 4.34, 6.1, 6.34*) is included in the calculations, since this activity constitutes significant movement of troops. The physical movement of entire armies, army contin-

<sup>44</sup> *Caes. Gal. 3.29*.

<sup>45</sup> This construction is quite regularly used; see for example *Caes. Gal. 4.21, 5.25, 5.46* or *Sal. Iug. 91* and *62*.

gents (such as legions or cohorts) and individual soldiers or commanders, both on and off the battlefield, are all included.<sup>46</sup>

No distinction is made between contexts in which the swiftness is presented as a positive or negative attribute. For example, in *Caes. Gal.* 5.48 swiftness is presented as a positive attribute, *Caesar [...] unum communis salutis auxilium in celeritate ponebat. Venit magnis itineribus in Nerviorum fines* (Caesar [...] regarded swiftness as the only means [to preserve] the common safety. With long marches he arrived in the territory of the Nervii). On the other hand, in *Caes. Gal.* 5.33 swiftness is more related to a negative situation, *Praeterea accidit, quod fieri necesse erat, ut vulgo milites ab signis discederent, quae quisque eorum carissima haberet ab impedimentis petere atque arripere properaret, clamore et fletu omnia complerentur* (On top of that happened what was deemed to happen, [viz.] that the soldiers en masse left their standards and that everyone hurried to look and snatch away from the baggage train those things which they held most precious, that everything was filled with clamour and weeping). Moreover, the interpretation as positive and negative also depends on the focalisation of the context. Sallustius writes for example (*Sal. Jug.* 52), *plerosque velocitas et regio hostibus ignara tutata sunt* (swiftness and the enemies' [Romans'] unfamiliarity with the region saved many [Numidians]). While this is positive (they are saved) from the point of view of the Numidians, at the same time it is presented as a disadvantage to the Romans to end the war. All of these contexts are included.

Lastly, it is noted that certain contexts of the words indicating swiftness amplify the perception of *celeritas* of the general in question. This is for example the case in the seventh book of the *De Bello Gallico*, when Caesar mentions that his *celeritas* was not just an incidental phenomenon, but rather a recurring thing.

*Quo ex oppido cum legati ad eum venissent oratum ut sibi ignosceret suaeque vitae consuleret, ut celeritate reliquas res conficeret, qua pleraque erat consecutus, arma conferri, equos produci, obsides dari iubet.*

When messengers came to him [Caesar] from this oppidum to plead that he would forgive them and spare their lives, in order to settle the remaining business with the swiftness with which he handled most things, he ordered that [their] weapons should be assembled, [their] horses yielded and hostages delivered.

(*Caes. Gal.* 7.12)

The subordinate clause *qua pleraque erat consecutus* (with which he handled most things), which does not add any crucial information to the narrative, underlines the recurrence of Caesar's *celeritas*. In other cases Caesar refers

<sup>46</sup> It is assumed that commanders travelling in a military context would typically be accompanied by some sort of entourage or bodyguard.

to the effect of his swiftness. For example, after the Roman legions swiftly marched eight miles to attack the Usipetes and Tencteri, Caesar reports that the Germans were perturbed by the swift arrival of the Romans, *perterriti [...] celeritate adventus nostri* (perturbed [...] by the swiftness of our arrival, Caes. *Gal.* 4.14). In these specific examples, Caesar uses implicit methods (by referring to the recurrence or the result of his *celeritas*) to enhance the effect of the explicit references. These implicit qualifications of Caesar's *celeritas* inevitably further contributed to the representation of *celeritas*. They are however unquantifiable and therefore not included in the statistical calculations.

Taking all of the above considerations into account, all the relevant instances of words indicating swiftness explicitly are identified and counted. Frequencies are subsequently calculated by dividing these numbers by the total number of words of the respective texts. For the total number of words the digitalised texts are used. Note that in this method enclitics, such as *-que* or *-ne*, are not accounted for in the total number of words. However, it is assumed that this inaccuracy does not significantly distort the outcome of the statistical study.

## 4.2 RESULTS

In Figure 2 the frequencies of the selected words referring to swiftness of movement for both the Romans and their enemies are presented. In Appendix A (on page 46) the data is presented.

There are a few exceptional cases, which need to be discussed individually. Sallustius (*Iug.* 45) uses the term *transvorsis itineribus* (transverse marches)<sup>47</sup> of which the actual meaning is unclear. Paul (1984, 139) compares it to a similar phrase (in Greek) by Appianus.<sup>48</sup> As both instances refer to marches performed to train the soldiers, its meaning is unlikely to constitute swiftness, and the occurrence in the *Iugurtha* is not included in the statistical study. Next, in a aetiological story, Sallustius (*Iug.* 79) refers to the swiftness of the (mythical) Philaeni brothers. Similarly, Caesar (*Gal.* 1.33) refers to the invasion of Italy by the Cimbri and Teutoni. These instances have also been excluded from the study, since both the Philaeni brothers and the Cimbri and Teutoni are not part of the conflicts under investigation.

Then, regarding the results in Figure 2, one may firstly observe that references to swiftness are significantly more frequent in the *De Bello Gallico* as compared to the other two authors, which is indicated by the point for Caesar lying furthest from the origin. While the frequency in Sallustius is in

<sup>47</sup> The translation 'transverse marches' is Batstone's (2010, 82 and 191), but he accompanies the translation with a footnote indicating that the meaning of this translation in English is as obscure as is the Latin.

<sup>48</sup> App. *Hisp.* 86.



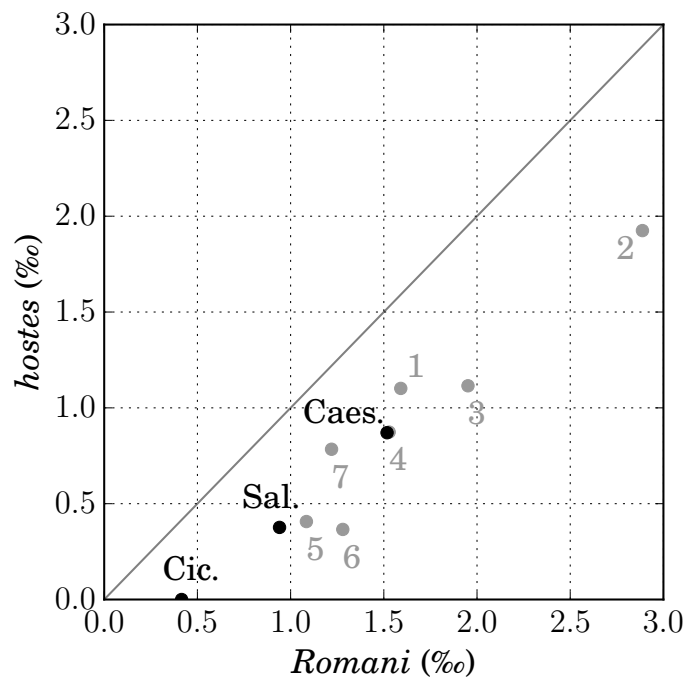


Figure 2: Frequencies of words referring to swift movement for the Romans and their enemies. The grey dots and numbers indicate the respective books of the *De Bello Gallico*. The points indicated by the authors' abbreviated names represent the frequencies of the selected words in the entire selected corpora of the respective authors. The grey line indicates equality between the frequencies.

the lower range of the separate books of the *De Bello Gallico*, the frequency in Cicero is much lower. Indeed, while there are numerous scholars who identified *celeritas* as a theme in Caesar's works,<sup>49</sup> also for the *Iugurtha* this theme has been noted.<sup>50</sup> Finally, it is noted that the frequencies are highest for the first three books of the *De Bello Gallico*; all of these points are further from the origin than the overall value for the *De Bello Gallico*, while the last three books are all closer to the origin, indicating lower frequencies of references to swiftness.<sup>51</sup> This observation corroborates assumptions that there is a change in style in the *De Bello Gallico* around the fourth book (which in turn has been used as an argument to assume that the *De Bello Gallico* was composed year by year).<sup>52</sup>

49 Swain 1907; Rambaud 1953, 251-254; Murphy 1977; Seiffert 2012.

50 See specifically Devillers 1999.

51 Note that frequencies in book 4 coincide with the values of the entire *De Bello Gallico* (the point for book 4 therefore lies under the point for the entire *De Bello Gallico* in Figure 2).

52 Compare for example Kroon's (2001, 223-224) observations of a changing style in the *De Bello Gallico* regarding particle constructions, (in)direct speech and verb tenses.

Secondly, the ratios between references to swiftness for the Romans and their enemies are, for both Caesar and Sallustius, relatively constant. Both authors refer to Roman swiftness slightly more than to the swiftness of their enemies, as indicated by all these points lying underneath the grey equality line. Also the distribution of the ratios of the separate books of the *De Bello Gallico* tend to follow this trend. Cicero, on the other hand, does not refer to the swiftness of his enemies at all. He, more generally, supplies us with relatively scant information on his enemies. The reason behind this observation might be rooted in reality; Cicero might have had considerably less access to reliable intelligence. Or it might be understood as a bias, considering the fact that Cicero openly solicits to receive a *supplicatio* (thanksgiving) for his military endeavours in Cilicia.<sup>53</sup>

Denooz (2007) has investigated the number of occurrences of the adverb *celeriter* and the noun *celeritas* in all of Caesar's writings and compared them to a corpus of other Latin texts.<sup>54</sup> He concludes that both *celeriter* and *celeritas* occur significantly more frequently in Caesar's writings as compared to the other texts.<sup>55</sup> The present results concur with these results in that occurrences of words referring to swiftness also seem to be more frequent in Caesar.

However, as opposed to Denooz's study, in the present work the focus is on all words (and phrases) that indicate swiftness, rather than just a few selected word forms. The following observations show that this is a significant improvement for a statistical study. While Caesar in the entire *De Bello Gallico* uses the lemma *velox* three times,<sup>56</sup> Sallustius uses this same lemma four times.<sup>57</sup> On the other hand, Sallustius uses the lemma *celer* only once, against 95 occurrences in the *De Bello Gallico*. Lastly, where Caesar never makes use of the verb *festino* in the entire *De Bello Gallico*, Sallustius uses this same verb 15 times. From these observations it can be concluded that the different authors show different propensities or preferences for particular words indicating swiftness. These results therefore underline the necessity to perform a statistical frequency study on word meaning rather than on specific word forms.

53 See for example Cic. *Fam.* 15.10 and 15.13.

54 Denooz (2007, 44) does not explicitly mention which texts were included in this corpus; he only states that it comprised of approximately 1,600,000 word forms.

55 For example, 171 occurrences of *celeriter* in Caesar on 223 occurrences in the entire corpus. Note however that not all of these words refer to Caesar or the Romans; see also the further analysis by Denooz (2007, 48-51).

56 That is in Caes. *Gal.* 1.48, 5.35, 6.28, referring to the Germans, Belgae and wild oxes, respectively.

57 That is in Sal. *Iug.* 17, 52, 91, 93, referring to Africans, Numidians, twice to Romans, respectively.

### 4.3 CONCLUSIONS

It is thus concluded that Caesar makes significantly more frequent use of words indicating swiftness as compared to the other two authors, which corroborates the assumption that *celeritas* is a prevalent theme in the *De Bello Gallico*. At the same time, while the frequency in the *Iugurtha* is at the bottom of the range of frequencies of the separate books of the *De Bello Gallico*, also in this work *celeritas* is a recurring phenomenon. Cicero refers significantly less frequently to swiftness in the accounts of his campaign in Cilicia. All authors refer to Roman swiftness more frequently than to the swiftness of their enemies, as might be expected, with Cicero as the extreme case who only refers to himself as being swift. Finally, an analysis of the diversity of the used lemmata indicating swiftness in the different texts confirmed that a statistical frequency study should be based on word meaning, rather than on specific word forms.

## 5

## REALITY

This chapter evaluates the *celeritas* of the different Roman generals based on a numerical-interpretative approach to the ancient texts. The approach is based on the assessment of passages which provide sufficient information on marching distances and marching durations, in order to allow the calculation of marching speeds.<sup>58</sup>

## 5.1 METHODOLOGY

There are various difficulties with the numerical interpretation of texts, which include among others inaccuracies in the presented numbers, qualification of numerals, uncertainties in the information available to the author, exaggeration or understatement of the numerical information. Due to these variabilities, it is not straightforward to interpret or convert a textual passage into a number. In order to mitigate biases in the results due to these variabilities, the calculations in this study are based on the Monte Carlo method.<sup>59</sup>

When applying the Monte Carlo method, calculations are not based on assuming a single value for a variable (e.g.  $v = 50$ ), but rather on repeated random sampling from a Probability Density Function (PDF or  $P$ ) for its value. A PDF thus represents the probabilities of certain values that the variable  $v$  has these values. Figure 3(a) represents a symmetrical triangular PDF with a 10% variation around the value 50 as an example. Thus, in the Monte Carlo calculations, in order to get a value for variable  $v$ , a value would be randomly chosen from this PDF. The highest chance is that the value chosen is 50, a lower chance that it is 49 or 51, and so on, with a very low chance of being 45 or 55 (and zero chance of being out of this range).

All PDFs in this thesis are presented as normalised histograms with 100 bins each, as in Figure 3.<sup>60</sup> Due to the normalisation (i.e. the area under the

58 It is noted here that, although the section title might indicate otherwise, this approach constitutes an interpretative reconstruction of reality, based solely on the written sources.

59 There is a lot of literature on Monte Carlo methods; see for example the book by Glasserman (2004).

60 A histogram is a graphical representation of a series of continuous data, for example, a series of data points with values between 1 and 10. The data is then divided over various bins, which are specific intervals of the entire range, in our example these could be 1 to 2, 2 to 3, etc. The histogram is then constructed as a bar graph, where the bars represent the bins, with their height representing the number of data points that fall in the respective interval range of that bin. Finally, the number of data points (and thus the heights of the bars) are

PDF is always unity), the PDFs are directly comparable. Thus, the smaller the range of the possible values of the variable (represented on the x-axis), the higher the probabilities are of these values and therefore the curve representing the PDF is higher and more narrow. When the range of possible values of the variable is larger, the probabilities of the respective values decrease, leading to a broader and lower PDF; compare for example 3(a) and (b), where PDFs with a 10% and 20% variation around 50 are presented, respectively. Note also that different types of PDFs can be used, including a uniform PDF as depicted in Figure 3(c) or an asymmetrical triangular PDF as presented in Figure 3(d). Thus, using the Monte Carlo method, various variabilities can be incorporated in the calculations by assuming differently shaped PDFs for the different variables (such as distances or durations).

Then, instead of performing a single calculation with fixed values for the variables, in the Monte Carlo method calculations are repeated numerous times, in this study 100 000 times. For every separate calculation, a value is randomly chosen from the appropriate PDF for every variable. The result from these calculations is also a PDF, not a single number.

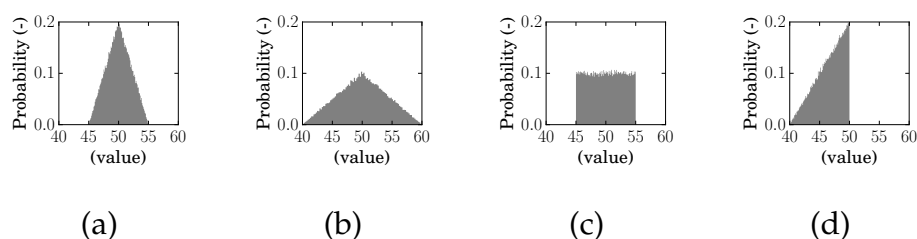


Figure 3: Examples of Probability Density Functions (PDFs).

There are mainly three types of data that are extracted from the texts to calculate the marching speeds; (1) numerals (indicating distances and timespans), (2) points in time and (3) geographical locations. All three categories have their specific challenges and imprecisions for their interpretation, which determine the choice of the assumed PDFs. The following subsections discuss these three types of information sources and their PDF selection.

### *Numerals*

Ancient texts contain considerable amounts of numerical data. However, there are several considerations for correctly interpreting this data, which include rounding, formulaic or stylized numbers, qualification of numerals, imprecision due to uncertainty, imprecision due to bias and genre. These considerations will be discussed consecutively.

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normalised such that the area under the histogram amounts to unity.

Firstly, in a textual context it is very natural to round numbers to its nearest discrete value in order to increase the readability of the text. This rounding is most prevalent in the reported marching distances. The *passus* (pace) is the major unit of length to indicate travelled distance in Roman times.<sup>61</sup> For longer distances, the term *mille passuum* (a thousand paces or a Roman mile) is used.<sup>62</sup> For example, Caesar uses a numeral accompanied by the word *passus* 62 times in the *De Bello Gallico*, of which 56 times (90%) it is also accompanied by the word *mille*.<sup>63</sup> In the other five cases the number of paces is a round multiple of a hundred. It is concluded that distances are rounded either to their nearest 100 or 1000 paces.<sup>64</sup> Thus, if such numerals indicating distances are used, the variation in the PDF should at least cover the range including the next 50 paces or half mile, respectively, to incorporate the rounding of the presented numeral in the text.

Scheidel (1996) assesses many different Roman sources for stylization of presented monetary valuations.<sup>65</sup> In order to distinguish between stylized and non-stylized numbers, he defines three categories of stylized numbers, i.e. multiples of 1, 3 and 4, where the multipliers can be themselves, 2 or 10. This however results in the fact that from all the discrete numbers below 10 only the numbers 5 and 7 are regarded as non-stylized numbers. Scheidel (1996, 231-237) then concludes that monetary valuations presented in Roman sources are dominated by stylized numbers. Additionally, Rubincam (2003, 449) raises the notion of formulaic numbers. She defines formulaic numbers as numbers which do not necessarily try to provide the most exact representation of an attempt to count or measure the respective phenomenon. Rubincam (2003, 453-9) performs a quantitative study on the ratio between formulaic and non-formulaic numbers in Greek poetry and historiography, assuming as formulaic numbers: 3, 5, 7, 9, 10 and 12, and all their multiples by ten. She concludes that formulaic numbers are used more frequently in poetry as compared to historiography, as could be expected since poets use a more elaborated and formulaic writing style. A propensity for using for-

61 Renger 2006 (Brill's New Pauly, accessed online 6th October 2016); one *passus* (pace, 1.48 m) consists of five *pedes* (feet, a foot being 29.5 cm).

62 A thousand paces (or five thousand feet) correlates to one Roman mile (1.48 km) and is generally translated simply as a mile. Note that in this thesis modern measures are referred to using the metric system, while the word mile is reserved for the Roman mile.

63 See also Appendix D. Note that 35 of all these instances (56%) are qualified; see below.

64 Caesar only uses discrete numbers to indicate the number of miles. He does not use expressions like one-and-a-half mile, using e.g. the word *dimidium* (a half); in these cases he uses 1500 paces instead. Although in this sense it seems that the Roman mile was not yet established as an independent unit, at the same time there are several examples of distances indicated by using only *mille* in the sense of a mile (see for example Caes. *Gal.* 5.13, *Civ.* 1.64 or *Sal. Iug.* 91), omitting in these cases the addition of the actual unit *passus* (paces).

65 Where stylization can be understood as an augmented version of rounding; a 'real' number is rounded to a near stylized number, instead of to the nearest discrete number.

mulaic or stylized numbers would potentially reduce the interpretability of the presented numerical data. In order to assess if the numbers used in this study show such formulaic or stylized nature, the frequencies of numerals accompanied by *passus* (a pace) or *mille passuum* (a mile), as used by Caesar in the *De Bello Gallico* to indicate distances, decreased to their lowest representative discrete number, are presented in Figure 4, as an example. It can be observed that Caesar did not have a propensity for using formulaic or stylized numbers more frequently than non-formulaic or non-stylized numbers. It is therefore assumed that the quantified phenomena in the texts under investigation in this study do not have a prevalent tendency towards formulaic or stylized numbers.

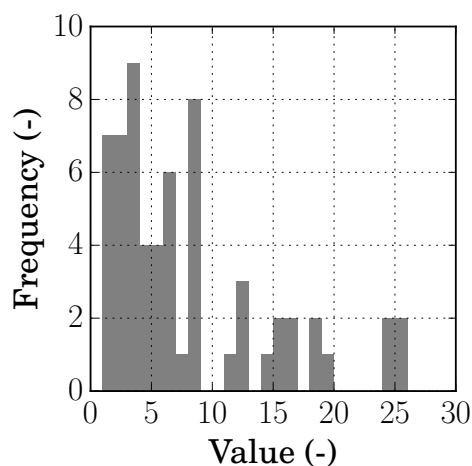


Figure 4: Frequencies of numbers (decreased to their lowest representative discrete number) used by Caesar in the *De Bello Gallico* to indicate distances.

Next, the qualifications of numerals in textual contexts is considered.<sup>66</sup> The qualification of a numeral in a textual context constitutes the additions of words or wording which informs the reader on the range of variability of the presented numeral. Compare for example the following three expressions, 'he travelled 50 miles', 'he travelled about 50 miles' and 'he travelled more than 50 miles'. In the first case, to assume 50 for the number of travelled miles seems to be straightforward. Also for the second expression an assumption of 50 miles is most appropriate, although the qualification 'about' makes this value less certain or having a larger variability as compared to the previous expression. The latter expression however limits the range of variability of the presented numeral; in this case the value is (a little) more than 50, most likely still close to 50, but definitely not less than 50. The latter

<sup>66</sup> Rubincam 1979a, 1979b, 2003.

two examples represent the two main categories of qualifications, i.e. approximating and comparative qualifying expressions, respectively.<sup>67</sup> In a way, the comparative expressions increase the precision of the presented numeral, by excluding variations of the numeral either upwards or downwards, while the approximating expressions increase the imprecision or uncertainty of the presented numeral. It can be expected that many numerals in the present texts are qualified, since Rubincam (2003, 460-2) found that historians tend to qualify more frequently than poets. The main reason is that the historian in principle tries to supply reliable information (and thus indicates when he cannot do so). These textual qualifications can now be reflected by selecting an appropriate PDF for a variable, e.g. to cover only values below 50 by employing an asymmetric triangular PDF as in Figure 3(d). They are as such incorporated into the Monte Carlo calculations.

Rubincam (1979, 301) further argues that ordinals are by definition more precise than cardinals. It is noted that of the numerals used to indicate distance and timespan, the former are predominantly cardinals, whereas the latter mostly constitute ordinals. For example, the indications of distance in the *De Bello Gallico*, which are used in this study, comprise of Caes. *Gal.* 1.21, 1.22, 5.9, 5.46, 5.47, 7.39 (all cardinals). Compare this with a 95% of cardinals for all occurrences of distance indications using a numeral and the word *passus* (pace); see Appendix D. For the indications of time and timespan the results are slightly more diverse. For example, the numerals used together with the word *vigilia* (watch) to indicate a point in time are all ordinals; see Appendix B. Meanwhile, the numerals paired with *hora* (hour) are divided over both cardinals (36%) and ordinals (64%). It is however observed that the cases where *hora* is accompanied by a cardinal indicate a timespan, whereas those accompanied by ordinals indicate points in time. It is thus concluded that the choice of numeral (cardinal or ordinal) is not so much directed by their respective annotation of (im)precision, but rather by context and meaning.

Next, Rubincam (1979, 301) also concludes that ordinals, because of their inherent precision, are less frequently qualified as compared to cardinals. However, if we compare all the numerals used by Caesar to indicate time and distance, the frequencies of qualification for ordinals and cardinals are 80% and 56%, respectively.<sup>68</sup> These results tend to contradict Rubincam's conclusion, while corroborating the assumption that the category of quantified phenomenon influences the tendency to qualification. Indeed, while

<sup>67</sup> Rubincam (1979a, 329; 1979b, 78-79) distinguishes a third (less common) category of emphatic qualifying expressions. Emphatic qualifying expressions however do not accentuate the (im)precision of the numeral, and is therefore less important to the present study.

<sup>68</sup> These frequencies are based on all instances of numerals with *vigilia* (watch) and *hora* (hour) for time and *passus* (pace) for distance; see also Appendices B, C and D, respectively.



69% of the numerals with *vigilia* are qualified, 86% of those with *hora* are qualified. This difference could be explained by the fact that since a *vigilia* covers a longer period (three *horae noctis*) compared to a single *hora noctis* or *hora diei*, the chance is higher that a statement using *vigilia* is accurate. Moreover, of all numerals indicating time (both with *vigilia* and with *hora*) 77% is qualified, while only 56% of the expressions indicating distance are qualified.<sup>69</sup> It is concluded that the type of information presented thus not only prescribes what type of numeral is used, but also influences the tendency for qualification.

Next, the kind of information the authors had access to and how reliable this data was is considered. As both Caesar and Cicero reported on their personal military endeavours, they definitely had access to more extensive and more reliable information (on for example marching durations and distances) than Sallustius had, the latter writing both about other people and about events more distant in time.<sup>70</sup> This discrepancy in reliability is further increased by Sallustius' probable prevalent reliance on written sources.<sup>71</sup> However, since in the first century BCE (especially mobile versions of) accurate measurement instrumentation (for both the measurement of distance and time) must have been limited, the available information even to Caesar and Cicero must have been approximative.

Furthermore, as has been discussed before, the *De Bello Gallico* has been mostly designated as a means of self-glorification (see Chapter 2) which makes it as such prone to bias. Although Caesar is mostly acquitted of outright lies, it has been argued that he was a master of manipulating the presentation of the events in his favour.<sup>72</sup> However, it is notoriously difficult to disprove the historical accuracy of the *De Bello Gallico*,<sup>73</sup> while on several occasions facts presented have been proven using modern archaeological research.<sup>74</sup> Balsdon (1957, 24) further argues that the readership of the *De Bello Gallico* was both educated and had access to eyewitnesses of the war fought in Gaul. They would thus be able to detect any misrepresentations in the *De Bello Gallico*, if too blatant. Also Cicero explicitly advertised himself to

69 Note that these statistics are based only on the mentioned instances of numerals accompanied by *vigilia*, *hora* and *passus*. In order to further substantiate the preliminary conclusions from these calculations, a comprehensive study should be performed on the use of all numerals in e.g. the *De Bello Gallico*. This was however out of the scope of the present study.

70 Sallustius wrote in the second half of the first century BCE about events which happened just before the start of the first century BCE.

71 Considering a time lapse of at least 50 years between the actual events and the writing thereof, it is unlikely that Sallustius had access to eyewitnesses. In 46 BCE he was however made proconsul of Numidia (Africa Nova) after Caesar's campaign there (*B. Afr.* 97), so he knew the lands.

72 This manipulation has been termed by Rambaud (1953) as *déformation historique*.

73 Riggsby 2006, 1.

74 See for example Roymans and Scheers 2012.

the Senate in order to receive a *supplicatio* (thanksgiving) for his military endeavours,<sup>75</sup> which makes his writings (especially the two letters to the Senate) also suspicious for bias. At the same time, Cicero also pleads Lucceius to write a history about him because *me [...] commemoratio posteritatis ac spes quaedam immortalitatis rapit* (reminiscence with posterity and a certain hope for immortality seizes me [Cicero]).<sup>76</sup> Sallustius on the other hand, had no such self-interest in the presentation of his narrative. However, his work is also not a straightforward historical account; in the introduction it is pointed out that the theme of the *Iugurtha* is the political morality and social differences in the late first century BCE.<sup>77</sup> Therefore, although these three authors have different agendas, they are all prone to bias. Unfortunately, these biases are untraceable in the ancient texts (and if traceable, they are unquantifiable) and cannot be included in the calculations.

Finally, closely related to the assessment of the authors' biases, is the influence of the employed genre. Syme (1964, 142-150) concluded that Sallustius, as a historian, is more interested in drama, than in accurate representation of the actual facts. Pelling (1981, 741-742) also concludes for the *De Bello Gallico* that supplying sufficient data allowing a complete reconstruction of the actual events was not among Caesar's primary intentions.<sup>78</sup> The fact that Cicero wrote letters to his contemporaries, who were (political) stakeholders in the events, make his information slightly more reliable from a genre point of view (considering Balsdon's argumentation for the *De Bello Gallico* above).

It is thus concluded that for the numerals (cardinals) indicating distance in the text, a standard variation of 10% is assumed, with at least including 50 or 500 paces either side, in order to include all these variabilities. If the numeral is further qualified with an approximative expression, e.g. *circiter* (around), the variation is increased to 20%. When a comparative qualification is used, such as *non longius* (not longer than), an asymmetric PDF is designed accordingly. The numerals indicating marching durations are predominantly ordinals and are typically used to specify the day of arrival of a march, e.g. *die septimo pervenit* ([Caesar] arrived on the seventh day, *Caes. Gal.* 1.10). None of these instances are qualified. But this type of reckoning is imprecise due to the lack of knowledge of when Caesar arrived on that day. As it is unlikely that a full marching day is reckoned for just an hour of marching or so, it is assumed that the arrival is in the afternoon of the mentioned day. Thus, for the present example, a triangular symmetric PDF between 6.5 and 7 days is assumed.

75 See for example *Cic. Fam.* 15.10 and 15.13.

76 *Cic. Fam.* 5.12.

77 *Sal. Iug.* 1-5.

78 See also Goudineau 2000, 166-167.

*Points in time*

For some of the shorter marches, points in time for departure and arrival are indicated. A basic understanding of Roman time keeping is required, in order to correctly reconstruct the time lapsed between these points.

Roman time keeping was primarily based on the alternation of light and dark, representing day and night, respectively. The day was subdivided into 12 equal *horae* (hours), whereas the night was divided into four equal *vigiliae* (watches), each of which was further subdivided into three *horae noctis* (night hours).<sup>79</sup> Due to the axis of rotation of the earth being tilted relative to the earth's orbit around the sun, the duration of light and darkness varies with the seasons and with latitude (i.e. distance from the equator). Therefore, also the actual duration of the *horae* and *vigiliae* varied with season and location. It is further noted that the Roman calendar used midnight (i.e. the beginning of the third *vigilia*) as the starting point of a new day.<sup>80</sup>

Using the algorithms of the *pyephem* library,<sup>81</sup> astronomical calculations can be performed for any location on the globe (using its latitude and longitude coordinates) at any date (also for the first century BCE). Thus, the lengths of the days and nights during the various military campaigns can be calculated from estimated sunrise and sunset times. In Figure 5 this variation is presented for Rome in the year 54 BCE. The astrological turning points for the seasons constitute the winter solstice, spring equinox, summer solstice and autumn equinox.<sup>82</sup> Using this approach, both the date (or at least the season) and the location (longitude and latitude coordinates) of the reconstructed marches are to be estimated.

While the approximate locations of the marches are generally known, the information supplied in the ancient texts on the dates of the events is typically scarce. Therefore, rather than an estimated date, I have decided to work with seasonal periods. Firstly, it is assumed with Goudineau (2000, 248) that the military season generally ran from the spring to the autumn equinox. There are two examples that substantiate this assumption. Both in 55 and 54 BCE, soon after Caesar sailed back from Britain around the autumn equinox (Caes. *Gal.* 4.36 and 5.23, respectively), he immediately starts locating his legions in their winter camps (Caes. *Gal.* 4.38 and 5.24, respectively). The full year is then divided into eight seasonal periods (P1 to P8), each period cover-

79 Dohrn-van Rossum 1996, 19. In order to avoid confusion, in the remainder of this thesis the Latin words (*hora*, *hora noctis*, *vigilia*) will be used indicating the Roman time keeping units, while the English words (mainly hour) will refer to the modern time keeping units.

80 Samuel 1972, 13.

81 These algorithms are implemented using Spyder, which is an integrated development platform for the programming language Python (version 2.7 is used).

82 An equinox is the day where the day and night are of equal length (12 hours each), whereas the solstice indicates the day of the shortest night and day, for summer and winter, respectively.

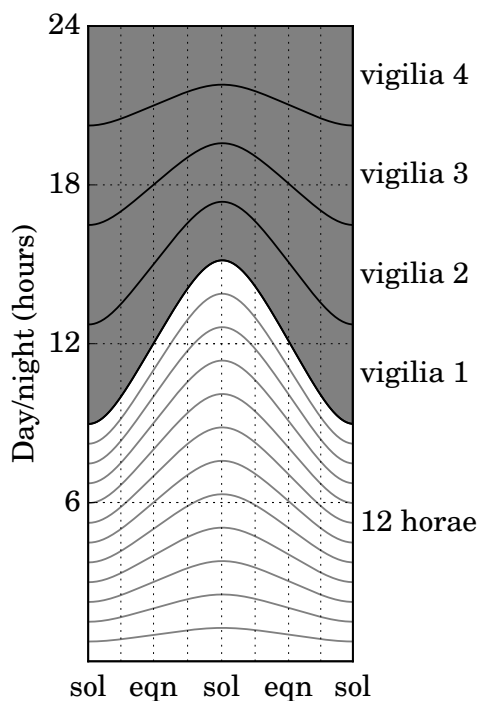


Figure 5: Seasonal duration of the *horae* and *vigiliae*; 'sol' indicates a solstice and 'eqn' the equinoxes. The presented data is for Rome in 54 BCE.

ing half of the time between a solstice and an equinox; see also Figure 6. The military season reaches thus from P3 to P6. For every march it is estimated in which seasonal period it took place. The duration of light and dark (day and night, respectively) is calculated for the respective seasonal period, using the times of the astrological sunrise and sunset. These durations will thus cover a range for every seasonal period. A uniform PDF, with equal probability for every duration between the minimum and maximum durations for the day and night, is then implemented in the Monte Carlo calculations.

Next, it is noted that an indication of time in Latin, using an ordinal with the word *hora* (hour), e.g. *hora tertia*, can have three distinct meanings.<sup>83</sup> If it indicates a time period, it either refers to the third hour of the day or the quarter of the day that ends with the third hour.<sup>84</sup> If it however indicates a point in time, it refers to the end of the third hour.<sup>85</sup> For example, Caesar uses in the *De Bello Gallico* an indication of time using an ordinal with *hora* nine

<sup>83</sup> Note that all instances of cardinals with *hora* indicate a timespan. They are not subjected to the presently discussed ambiguity and are therefore not considered here.

<sup>84</sup> The latter interpretation is only applicable to the last hours of the four quarters, i.e. the third, sixth, ninth and twelfth hours.

<sup>85</sup> Dohrn 1996, 19.

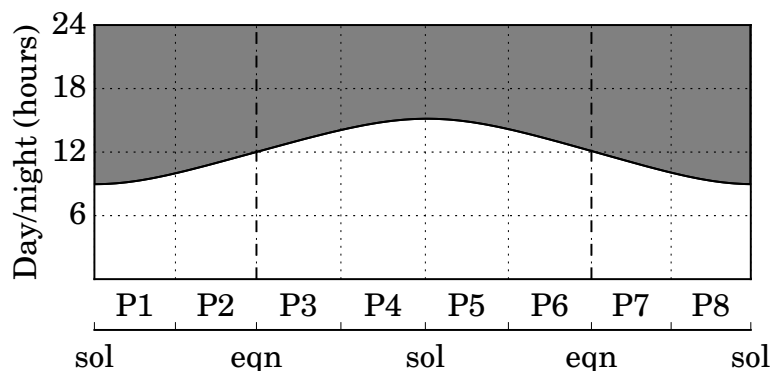


Figure 6: Variation of day and night time over the seasons; sol indicates a solstice and eqn the equinoxes. The presented data is for Rome in 54 BCE.

times (see Appendix C). Since only four instances of these are multiples of three and can possibly refer to a quarter of the day instead of the actual hour, it is assumed that all references are to the hours for consistency purposes. The context of the sentence will then determine whether the interpretation is a point in time or a time period. Moreover, it is noted that all of these instances are qualified, although they are all ordinals, indicating that these time references are generally not considered very accurate. Every indication of an hour of the day is interpreted as the *hora* plus or minus half an *hora*. If the numeral is qualified by an approximate qualifier, such as *circiter* (around), the variation is increased to plus or minus one *hora*.

For the references to time during the night, the four watches are typically used, e.g. *tertia vigilia* (at the third watch). For example, in the *De Bello Gallico* there are 16 instances of time indications using *vigilia*. The *vigilia* can refer, analogously to the *hora*, to either a point in time or a time period. However, the point in time indicated by *vigilia*, as opposed to *hora*, seems to coincide with the start of the watch. This is evident from *Caes. Gal.* 1.21-22, where Caesar writes that he marched a distance of about 6.5 miles *de quarta vigilia* (starting from the fourth watch), arriving *prima luce* (at first light).<sup>86</sup> Since first light is the end of the fourth watch, *vigilia*, in this instance, can only mean the start of the watch. Again, the respective context will provide the required information to decide between an interpretation as point in time or time period. Every indication of time using *vigilia* is interpreted as the *vigilia* plus or minus one *hora*. If the *vigilia* is qualified with e.g. *de*, an asymmetrical triangular PDF from the start of the watch to one *hora* later is assumed.

<sup>86</sup> Note that the qualification *de* indicates that *vigilia* is to be understood as the point in time; the OLD gives the following meaning for *de ... vigilia*, "starting with or at (a point of time)" and "immediately after, following" (OLD, 533, meaning 4.)

### *Geographical locations*

This section can be roughly split twofold; it discusses firstly the uncertainties due to unresolved identification of locations indicated in the texts and secondly the inaccuracies due to the reconstruction of the itinerary followed between these locations.

The identification of geographical locations mentioned in ancient texts has always been a point of scholarly debate.<sup>87</sup> In this study, the identification of places as presented in the Barrington Atlas of the Ancient World (2000, hereafter BA) is taken as authoritative. For those cases where either the ancient text is ambiguous on the exact location or no consensus has been reached on its identification, philological evidence is reviewed to come to a conclusion. In the last century and a half, numerous monumental monographs have been compiled entailing extensive reconstructions of the ancient military campaigns.<sup>88</sup> All of these studies mainly rely on philological argumentation, interpolations and derivations.<sup>89</sup> Finally, where available, also modern archaeological studies are used. If for a single location multiple possible identifications are available, without any definite arguments to discard any of them, all of the locations will be included in the calculations. Itineraries are reconstructed (see below) between all possible identified locations and a uniform PDF is assumed between the lengths of the shortest and longest reconstructed itinerary.

Next, the distance between the identified locations has to be determined. The itineraries are reconstructed using Geographical Information System (GIS) maps. Detailed maps of ancient Gaul, Numidia and Cilicia are constructed using the software package QGIS 2.8.1. The spatial data is retrieved from the Ancient World Mapping Center<sup>90</sup> and the US Geographical Survey.<sup>91</sup> If an ancient place is not represented in the BA, but a modern equivalent is known, the longitude and latitude of the modern location was retrieved from Google maps and introduced in the GIS maps using the Numerical Digitize package in QGIS. The Europe Equidistance Conic coordinate reference system is used to minimise measurement errors due to projection.

87 Pelling's (1981) argument that Caesar simply did not give enough information for a geographical reconstruction, goes for other ancient authors likewise.

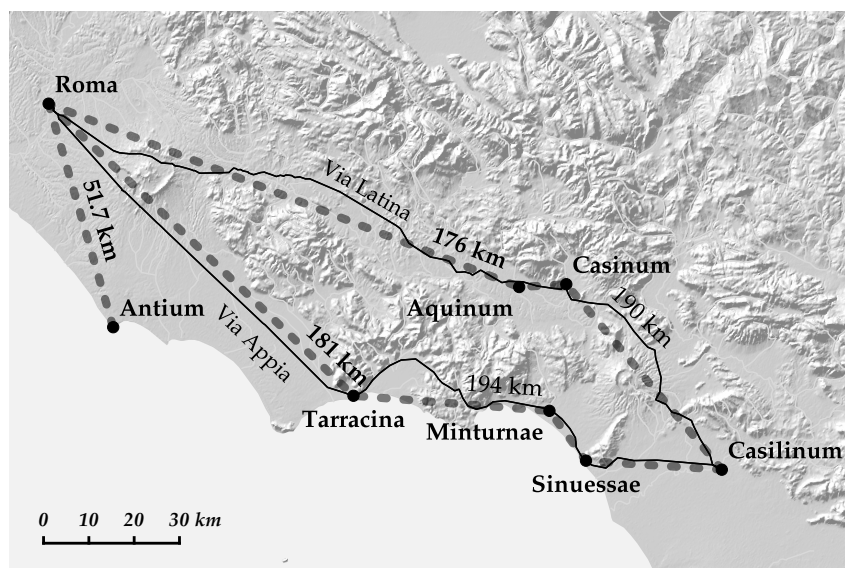
88 For Caesar's campaigns in Gaul the proponents are Stoffel (1890), Napoleon (1865, 1866), Jullian (1909), and Holmes (1911). Gsell (1928) has compiled a similar reconstruction for Sallustius' *Iugurtha*.

89 Holmes (1911) also includes a detailed analysis and review of the previously proposed reconstructions.

90 Retrieved from [www.awmc.unc.edu](http://www.awmc.unc.edu) on 12th September 2016. The retrieved data is a digitalised form of the geographical data of the BA and includes ancient coastlines, rivers, roads and places.

91 Retrieved from [www.earthexplorer.usgs.gov](http://www.earthexplorer.usgs.gov) on 12th September 2016. Used for retrieval of elevation data.

The GIS maps are validated using the distance between Rome (from the Pantheon, coordinates: 41.89854, 12.476963) to Antium (coordinates: 41.446577, 12.629472), as the crow flies. For this purpose, the distance was estimated using both the currently developed GIS maps and Google maps.<sup>92</sup> The estimated distance was 51.8 km and 51.7 km, respectively; see also Map 5.1. It is thus validated that the current GIS maps are accurate.



Map 5.1: Central Italy, indicating the distance between Rome (the Pantheon) to Antium, as the crow flies, and the itineraries from Casilinum to Rome over the Via Appia and Via Latina.

In this thesis, the ancient (Latinised) names of places are used as they are represented in the BA. Additionally, modern names of places are indicated in brackets. Note that for some ancient places more than one modern location has been identified, which will then be represented by including both the ancient and modern names, e.g. Ocelum (Usseau) and Ocelum (Dubriaglio).

Once the locations are determined on the map, the itinerary or route is reconstructed for the marches. The geographical data also includes ancient roads, rivers and elevation. Thus, for the calculation of the marching distances, the most probable route can be estimated. It is assumed that the Roman generals relied only on terrestrial routes (as opposed to riverine or coastal transport) for the movements of the legions.<sup>93</sup> The itineraries are then reconstructed on the GIS maps, based on the locations of (later) Roman roads and landscape features, such as hills, mountains or rivers.

Note that the roads indicated in GIS, which are derived from the BA, can either represent a route or an actual road. The latter includes e.g. winding of

<sup>92</sup> Retrieved from [www.maps.google.com](http://www.maps.google.com) on 12th September 2016.

<sup>93</sup> Scheidel 2013, 6, notes 19 and 20.

the road due to the presence of natural features, whereas the former merely indicates the approximate course of a connection between two locations. Therefore, a route is typically shorter than a road. For our period (the first century BCE) and regions (Gaul, Numidia and Cilicia), the available information on actual ancient roads is scarce. Therefore, the PDFs of the estimated distances should take this inaccuracy into account.

In order to estimate the extent of this inaccuracy, firstly, the marching distance between Casilinum and Rome is estimated. There are two ancient roads connecting these places, the Via Latina (over Casinum and Aquinum) and the Via Appia (over Sinuessa, Minturnae and Tarracina). The actual trajectories of these roads are relatively detailed in the BA. The distances between Casilinum and Rome following these roads is 190 and 194 km, for the Via Latina and Via Appia, respectively.<sup>94</sup> If the route would be reconstructed based on straight lines between the intermediate places (Casilinum, Casinum, Aquinum, Rome for the Via Latina and Casilinum, Sinuessa, Minturnae, Tarracina, Rome for the Via Appia), the travelled distances would be 176 and 181 km, respectively. Therefore, the reconstructed routes are about 7 to 8% shorter than the actual roads. Secondly, roads, which have to overcome steep ascents or descents, can wind up the steep parts in order to decrease the inclination of the road. It is known that Gallic roads used this type of winding to mitigate steep de-/ascents.<sup>95</sup> For example, the distance of the Alpine pass from Ocelum to Eburodunum (see Appendix F on page 84 for more details) is estimated with GIS to be 114 km. However, Strabo (*Geo.* 4.1.3) mentions the length of this pass to be 146 km, which is 28% longer. It is assumed that the difference is due to the winding of the road, which was not included in the GIS maps. Therefore, it is concluded that the PDF of the reconstructed route lengths from GIS will include a 20 % uncertainty for longer routes. Also a 10 % variation for shorter routes is included for the possibility that shortcuts were taken.

The marching speeds have thus been calculated using the Monte Carlo method taking all the above considerations into account. The results will be divided over two different categories of marches, viz. multi-hour and multi-day marches.<sup>96</sup> The resulting marching speeds for the two categories have different units (km/hour and km/day for multi-hour and -day marches, re-

94 Note that due to the high amount of inaccuracies and assumptions in these reconstructions, all distances are rounded to their nearest whole kilometre.

95 Caesar (*Gal.* 7.46) describes the approach to Gergovia as follows: *Oppidi murus ab planitie atque initio ascensus recta regione, si nullus anfractus intercederet, mille CC passus aberat: quidquid huc circuitus ad molliendum cliuorum accesserat, id spatium itineris augebat.* (The wall of the oppidum [Gergovia] was 1200 paces away from the plain and the beginning of the ascent, [measured] in a straight line if there were no bends in between: whatever detour was added to this to mitigate the slope increased the length of the track).

96 Kromayer and Veith (1928, 422) make a similar distinction.



spectively), and the comparisons of the results for the different authors will therefore also be divided into these two categories.

### *Typical marching speeds*

In the remainder of this section an inventory of 'typical' marching speeds for Roman legions, either mentioned by other ancient authors or reconstructed by modern authors, is presented. The calculated marching speeds can then be compared with these typical marching speeds.

Any study concerning the marching speeds of Roman legions refers to the military handbook of Vegetius. Vegetius (*Mil.* 1.9) writes that legionaries were trained to march at two different speeds; the *gradus militaris* (military step) and the *plenus gradus* (full [military] step).

*Militari ergo gradu xx milia passuum horis quinque dumtaxat aestiuis conficienda sunt. Pleno autem gradu, qui citatior est, totidem horis xxxiiii milia peragenda sunt. Quicquid addideris, iam cursus est, cuius spatium non potest definiri.*

Thus, using a military step 20 miles must be completed in approximately five summer hours. Then, at full step, which is faster, in the same number of hours 24 miles should be covered. If you add more, it becomes running, the distance of which cannot be defined.

(Veg. *Mil.* 1.9)

Legionaries were trained to march either 20 or 24 Roman miles (which coincides with 29.6 and 35.5 km, respectively) per five summer hours, which coincides with 4.9 and 5.9 km/hr, respectively.<sup>97</sup> It is generally assumed that Vegetius implies here that the legionaries marched only five summer hours per day, spending the remainder of the day for de- and reconstructing the marching camp.<sup>98</sup> Interestingly, in the entire *De Bello Gallico* the word *gradus* is never used, while Sallustius (*Iug.* 98) uses the term *gradus plenus* once.

Although Vegetius wrote in the fourth century CE, his data is widely used for almost any Roman period. Stolle (1912, 24-31) discusses four Caesarean scholars who either explicitly or implicitly rely on Vegetius' numbers. Also, Peddie (2004, 82-93), in his reconstruction of Caesar's march to the river Sambre, assumes a marching speed of 3 miles per (modern) hour, which coincides conveniently with Vegetius' *gradus militaris*. Benario (1986, 360) uses Vegetius' estimates for his analysis of Suetonius' march through Britain in the first century CE. Thorne (2007, 31) uses an estimate of about 25 km per

<sup>97</sup> Milner 1996, 10, note 6, assuming a typical *hora aestiva* (summer hour) of 1.2 modern hours.

<sup>98</sup> Goldsworthy (1996, 109-110) however is of the opinion that legionaries in the field marched less than these five summer hours by the time required to build the marching camp. This however would imply that the soldiers would be resting for seven summer hours of light per day (excluding the entire night), which seems to be abundant to me.

day for Caesar's marches when pursuing the Helvetii in 58 BCE.<sup>99</sup> Goudineau (2000, 252) believes that a typical day's march would not exceed 15 km, which can be doubled to 30 km in case of an emergency, implicitly referring to Vegetius by noting that these distances were completed in five hours. Furthermore, within the ORBIS project (a modern navigational application for the ancient Roman world), a speed of 30 km/day is assumed for foot travel.<sup>100</sup> Finally, Vegetius' speeds were used (in a totally different context) for the estimation of the metabolic rates of marching Roman legionaries.<sup>101</sup>

There are relatively few scholars who independently calculate the marching speeds based on the ancient sources. Kromayer and Veith (1928, 422) calculate the marching speeds for various Caesarean marches and conclude on a typical speed of around 20 km/day. While Stolle (1912, 40-46) focuses on Caesar, he incorporates also other sources and concludes on a much more conservative average of 12-15 km per day. Gichon (1981, 42) calculates 26.5 km per day for Cestius' march from Antiochia to Ptolemais-Acco, while Hunter (1913, 89-90 and 94) notes that Cicero travels much slower when he is accompanied by his army; his speed drops from 37 km per day to as little as 12 km per day. It is noted that the overall range is still very wide (12 to 26.5 km per day). More importantly, it is noted that all these authors assume the existence of a typical or normative day march, in terms of a typical or normative daily marching distance.

This implicit assumption has two roots. Firstly, the word *iter* is used occasionally as a unit of length. For example, Caesar uses the word *iter* in that sense when he describes the woods of Germania.<sup>102</sup>

*Huius hercyniae silvae [...] latitudo novem dierum iter expedito patet*  
A nine days' march, travelling lightly, covers the size of this Hercynian  
wood  
(Caes. *Gal.* 6.25)

Secondly, in several ancient texts a *iustum iter* (a proper [day's] march) is mentioned.<sup>103</sup> Also Caesar himself uses this term in the *De Bello Civile*.

99 Ultimately depending on Napoleon (1866, II, 57, note 2).

100 See [www.orbis.stanford.edu](http://www.orbis.stanford.edu), accessed 6th January 2016. It is however noted that the 'rapid military march' is estimated at 60 km/day. See also Scheidel 2013, 6-7 and note 22.

101 Whipp et al. 1998. The metabolic rate represents the rate of energy consumption by the legionaries.

102 See also Liv. 21.27 and 25.15.

103 See for an overview Stolle 1912, 40-42.

*Confecto iusto itinere eius diei, quod proposuerat Caesar, traductoque exercitu flumen Genusum in veteribus suis castris contra Asparagium consedit [...] Quibus ad sequendum impeditis Caesar, quod fore providerat, meridiano fere tempore signo projectionis dato exercitum educit duplicatoque eius diei itinere VIII milia passuum ex eo loco procedit;*

After the appropriate march for that day, which Caesar had intended [to do], was completed and the army had crossed the river Genusus, he settled in his old camp opposite Asparagium [...] Because they [Pompeius and his army] could not follow, something Caesar had foreseen, after giving the signal for the departure at about midday, he led his army out [of the camp] and repeating the march of that day proceeded eight miles from that location.

(Caes. Civ. 3.76)

Benario (1986, 360) discusses this example, but amends VIII to XVIII, mainly based on a disbelief in a typical day's march of only 8 Roman miles. Note that the amended 18 miles per day are very close to the 20 miles as presented by Vegetius. However, Kromayer and Veith (1928, 353-355) argue that there could be no *iustum iter* in the sense of a standard daily marching distance, because the distance of a day's march is naturally a function of many variables, among others elevation, road conditions, weather, state of the soldiers, enemy threats, etc. Accordingly, Kromayer and Veith propose that there was a standard marching duration (maybe the five summer hours?). Indeed, when Caesar uses *iter* as a unit of length (see above), he adds *expedito* (travelling lightly), in contrast with *impedito* (with full packs). Hereby he acknowledges that the marching distance depended on whether one travelled *expeditus* or *impeditus*.

The important conclusion of this discussion must be that individual marching speeds cannot straightforwardly be compared among each other. Their comparison has to be accompanied by an analysis of the circumstances of the respective marches, such as elevation, road conditions, weather, state of the soldiers, enemy threats, etc. However, as most scholars still predominantly refer to Vegetius' numbers, these numbers are included in the present study as a bench mark.

## 5.2 RESULTS

In Table 3 and 4 the calculated PDFs for the marching distances, durations and speeds are presented for the multi-hour and multi-day marches, respectively. The vertical (red) lines in the graphs represent the two different marching speeds as reported by Vegetius. In Appendices E and F discussions of the different marches and the specific difficulties of their calculations are present-

ted, again for the multi-hour and multi-day marches, respectively.<sup>104</sup>

Considering all the results together, the following general observations can be made. Firstly, in the *De Bello Gallico* there are many more instances where sufficient information was available to calculate a marching speed; eleven instances in the *De Bello Gallico* versus two in the *Iugurtha* and three in Cicero's letters. The commentaries contain relatively many (practical) details of the military campaigns. It is believed that the commentaries are comparable to (or even based upon) the dispatches Caesar undoubtedly sent to the Senate.<sup>105</sup> Indeed, the two letters Cicero wrote to the Senate during his governorship in Cilicia (Cic. *Fam.* 15.1 and 15.2) are similar in tone. Concerning Cicero, his letters typically contain many indications of time and place, which is probably due to the fact that at the time letters were the means to keep friends and family updated on each other's well-being and whereabouts. Interestingly, Cicero only indicates the events by days, which is reflected in only multi-day marches being reconstructed for him. The difference in the amount of reconstructible instances from the *De Bello Gallico* compared to those from the *Iugurtha* is more significant in showing the discrepancy in genre. Whereas the *De Bello Gallico* constitutes about twice the amount of words as the *Iugurtha*, the number of reconstructed marching speeds from the former is significantly more than twice as from the latter.

Secondly, the marches shorter in time typically constitute higher marching speeds. This can be explained by the fact that no resting times have been assumed and included.<sup>106</sup> While the soldiers could sustain a marching speed of about 4 km/hour for a short period (see e.g. Caes. *Gal.* 1.21, a march of about 2 hours) without significant resting, they would definitely not be able to maintain the same speed for a period of 24 hours or longer (see e.g. Caes. *Gal.* 7.39 or Sal. *Iug.* 68).

Thirdly, the marches with longer marching durations result in less variations (higher and more narrow curves) in the resulting PDF for the marching speed. This has to do with the fact that the variations in marching durations were taken as absolute and not relative (e.g. assuming a variation of one *hora* (hour) as opposed to a percentage of the entire marching duration).

104 It was decided to present the discussions of the various marches separately in Appendices E and F, in order to facilitate the comprehensibility of the main argumentation. Note that clickable references to these discussions (and their page numbers) are included in Tables 3 and 4.

105 Osgood 2009, 338-339. Rambaud 1953, 19-25.

106 Stolle (1912, 40-50) mentions for every march two separate marching speeds, one with and one without assuming resting time. There is however no method to accurately estimate these resting times, and for a comparative study the only solution would be to assume similar resting times per hour or per day. It is furthermore my believe that a general could also attain faster marching speeds by decreasing the amount of rest he would allow the soldiers. Note that for the march reconstructed from Caes. *Gal.* 7.39 a resting period is explicitly mentioned by Caesar, for which reason this is included in the calculations.

Table 3: Marching distance, duration and speed for multi-hour marches. In the first column the page number of the corresponding discussion in Appendix E is presented, while a click on the text also redirects to this page. The vertical (red) lines represent the marching speeds as reported by Vegetius.

Text	Distance	Duration	Speed
<a href="#">Caes. Gal. 1.21 (p.71)</a>			
<a href="#">Caes. Gal. 2.12 (p.73)</a>			
<a href="#">Caes. Gal. 5.9 (p.75)</a>			
<a href="#">Caes. Gal. 5.46 (p.76)</a>			
<a href="#">Caes. Gal. 5.47 (p.78)</a>			
<a href="#">Caes. Gal. 7.39 (p.79)</a>			
<a href="#">Sal. Iug. 68 (p.81)</a>			

These absolute variations are therefore influencing the resulting PDF to a lesser extent for the marches with longer marching durations.

Finally, very few of the PDFs (except the two marches of Caes. *Gal.* 7.11, Sal. *Iug.* 90 and Cic. *Fam.* 3.8, all in Table 4) show any reasonable probability of the generals achieving a marching speed at Vegetius' *gradus militaris* or *plenus gradus* (indicated by the vertical lines in the graphs). These results therefore corroborate Stolle's (1912, 46) conclusion that, if there was something like a *iustum iter* (proper [day's] march) in terms of distance, it would have been considerably lower than Vegetius' values.

The current PDFs for the marching speeds confirm the results presented by other modern scholars. For example, Stolle (1912, 44) decides on a range of marching speeds between 3 and 4.5 km/hour for a series of reconstructed marches, including Caes. *Gal.* 1.21, 5.9, 5.46 and 5.47. Kromayer and Veith (1928, 423) calculate a marching speed of 2.6 km/hour for the march of Caes. *Gal.* 7.39. Then regarding the multi-day marches, Hunter (1913, 90) concludes on 12 km/day for Cic. *Fam.* 15.1, whereas Kromayer and Veith (1928, 423) decide on 19 km/day for Caes. *Gal.* 1.41. Finally, Stolle (1912, 44-46) also estimated Cicero's marching speeds and concludes on 9 to 12 km/day for Cic. *Fam.* 15.1 and 17 to 18 km/day for Cic. *Att.* 5.20.<sup>107</sup>

Regarding the multi-hour marches in Table 3, all PDFs for Caesar's marches are within similar ranges. The highest probabilities for the estimated marching speeds fall roughly between 3 and 4 km/hour, which is in the same range as was estimated by Stolle (1912, 44). It is further noted that the only non-Caesarean multi-hour march (Sal. *Iug.* 68) is more or less in the middle of this range. This march is most comparable (with regard to the marching distance and duration) with Caes. *Gal.* 7.39, and indeed results in a similar PDF.

Turning to the multi-day marches (Table 4), there is much debate about the point of arrival of the march from Vesontio towards the Rhine.<sup>108</sup> In this method all reasonable identifications have been included, resulting in a very wide and low (thus uncertain) PDF. Nevertheless, this PDF tells us that the range of marching speeds for this particular march can be expected to lie within the range of 15 to 30 km/day. For specific comparisons however this march is less useful.

There are nonetheless several multi-day marches of Caesar which can be conveniently paired with marches from the other texts for comparison purposes. Firstly, both Caesar and Cicero marched over a mountain pass (over the Alps and the Taurus, Caes. *Gal.* 1.10 and Cic. *Att.* 5.20, respectively). In

107 I have presented here Stolle's values assuming no resting days. The discrepancy between the current PDF and Stolle's marching speed for Cic. *Att.* 5.20 is due to how Stolle (1912, 45) calculated the number of marching days; I follow Hunter (1913, 89-90).

108 Pelling 1986. Stolle 1912, 48-49. Holmes 1911, 638-652.

Table 4: Marching distance, duration and speed for multi-day marches. In the first column the page number of the corresponding discussion in Appendix E is presented, while a click on the text also redirects to this page. The vertical (red) lines represent the marching speeds as reported by Vegetius.

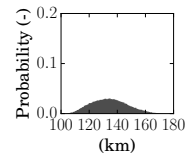
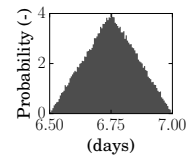
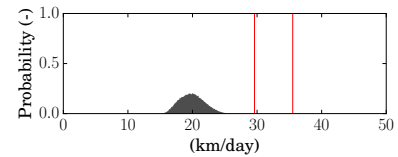
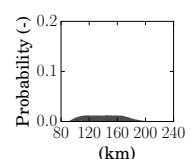
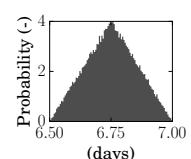
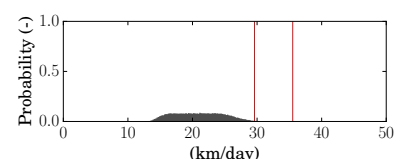
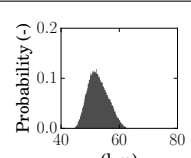
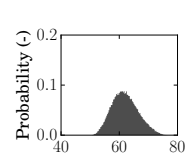
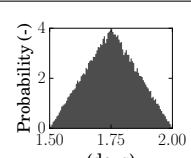
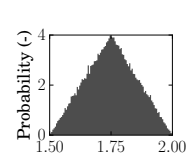
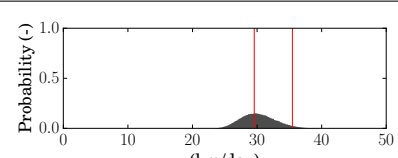
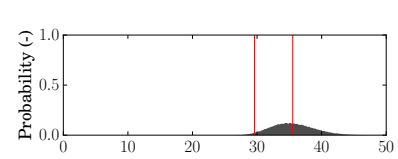
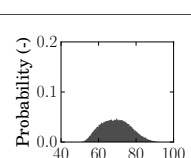
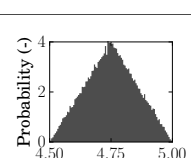
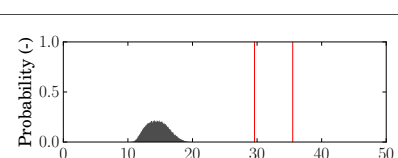
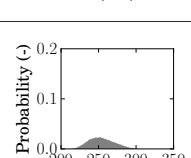
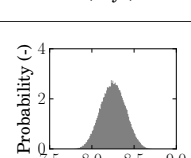
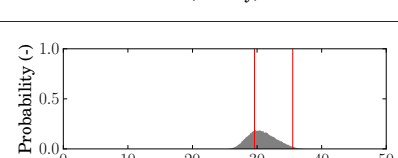
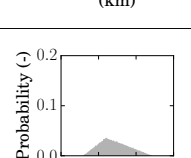
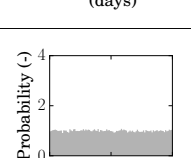
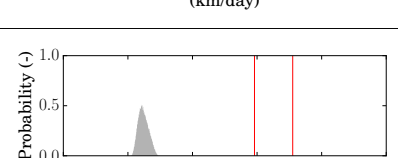
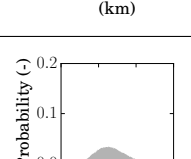
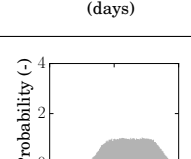
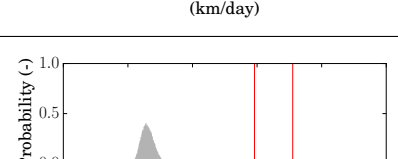
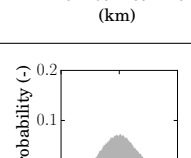
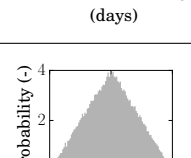
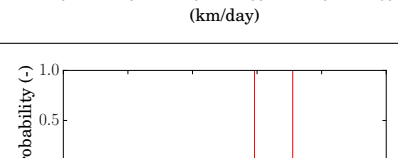
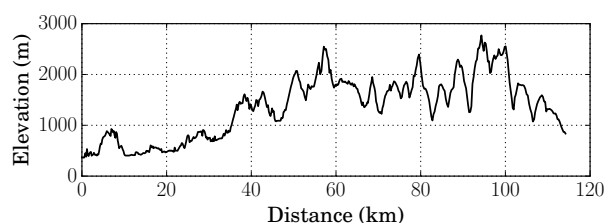
Text	Distance	Duration	Speed
Caes. <i>Gal.</i> 1.10 (p.84)			
Caes. <i>Gal.</i> 1.41 (p.87)			
Caes. <i>Gal.</i> 7.11 (p.90)	 	 	 
Caes. <i>Gal.</i> 7.36 (p.93)			
Sal. <i>Iug.</i> 90 (p.95)			
Cic. <i>Fam.</i> 15.1 (p.98)			
Cic. <i>Att.</i> 5.20 (p.100)			
Cic. <i>Fam.</i> 3.8 (p.102)			

Figure 7 the elevation profiles of these two marches are presented.<sup>109</sup> It is observed that both marches do include considerable ascents and descents. Moreover, considering the estimated marching speeds, Caesar is marching significantly faster than Cicero. There are of course many other considerations that might have influenced these marching speeds, such as, quality of the roads, weather, enemy threats, etc.

#### Caes. Gal. 1.10



#### Cic. Att. 5.20

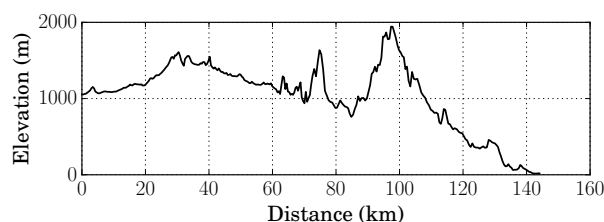


Figure 7: Elevation data for the marches over mountain passes of Caesar (*Gal.* 1.10) and Cicero (*Att.* 5.20).

Secondly, Caesar's fastest multi-day march (*Caes. Gal.* 7.11, lower row) is matched by one of Cicero's marches (*Cic. Fam.* 3.8). Interestingly, the durations and distances of both marches are very similar. Also, both marches traverse comparable landscapes in fairly flat country (see Appendix F for the maps). It seems that Caesar and Cicero marched on these occasions with similar marching speeds.

Finally, the nine days' march of Marius (*Sal. Iug.* 90) has a comparable PDF for the marching speed as Caesar's two days' march to Vellaunodunum (*Caes. Gal.* 7.11, upper row). This is remarkable, taking into account the observation that shorter marches are generally faster. Indeed, the two longer Caesarean marches (*Caes. Gal.* 1.10 and 1.41, both seven days) are significantly slower. It can therefore be concluded that Marius's achievement was considerable, also taking into account that his march was partly through the desert at night.

<sup>109</sup> Elevation profiles have been retrieved from the GIS maps using the Profile Tool package in QGIS.



### 5.3 CONCLUSIONS

The presently reconstructed marching speeds are mostly in accordance with those calculated by other modern scholars. On top of that, using the Monte Carlo calculations, the resulting probability density functions (PDFs) showed which types of information resulted in more reliable estimates for the marching speeds. Also, the influence of difficulties concerning identifying ancient locations was apparent in the PDFs. Very few of the PDFs predicted significant probabilities of marching speeds at the *gradus militaris* or *gradus plenus* as quantified by Vegetius. Moreover, shorter marches resulted consistently in higher marching speeds, which is probably a reflection of reality. It is further concluded that the comparison of the reconstructed marching speeds did not show any significant differences for the different generals. Although on one occasion it could be observed that Caesar marched significantly faster than his contemporary in a comparable march (Caes. *Gal.* 1.10 versus Cic. *Att.* 5.20), in most other cases the reconstructed marching speeds were either very similar or at least within the same range.

## 6

## CONCLUSIONS

First and foremost, it is concluded that Caesar had a demonstrable reputation for *celeritas*. This reputation was recognised even in his own time, resulting in Cicero adding the epithet *Caesariana* to *celeritas*, while describing, just a few months after Caesar's death, another Roman general's swiftness. The representation study furthermore showed that the references to Caesar's *celeritas* in the *De Bello Gallico* were significantly more frequent than both references to his enemies' *celeritas* and to the *celeritas* of contemporary generals described in the other texts. Especially the last observation is important, suggesting that *celeritas* was a consciously chosen theme for the *De Bello Gallico*. The results of the reality study pointed less unequivocally towards a significant difference between the different generals. Although in one specific comparison, between similar marches of Caesar and Cicero, Caesar was faster, the other results were too similar for conclusive inferences.

If these conclusions are considered together, it seems that Caesar's reputation for *celeritas* was not based on his significantly faster marching speeds as compared to other generals of his time. At the same time, as was hypothesised, he definitely seconded his own reputation by putting a significant emphasis on (his own) *celeritas* in the *De Bello Gallico*. It must be noted that the swiftness in thinking aspect could also have been an important part of Caesar's real *celeritas* and may be analysed in future studies.

On a more general note, it is concluded that the probabilities calculated here for the marching speeds corroborate Stolle's assumption that a *iustum iter*, in the sense of a typical day's march, was much lower than the values presented by Vegetius. Also, this examination showed that a statistical frequency study should be based on word meanings, and not on word forms.

This study opens up many opportunities for further investigation. A statistical analysis of the obtained probability density functions (PDFs) could be performed. For example, all PDFs of the different generals could be used to calculate a weighted average for each general. These calculations could potentially result in mean values with standard deviations for the different generals, although the variability of the different marches and the low number of data points per general remain considerable restrictions. Also the *De Bello Civile* may be subjected to a similar study as presented in this thesis. A comparison of the results from the *De Bello Gallico* and the *De Bello Civile* could potentially further elucidate on Collins' hypothesis on the different objectives of the two works (self-glorification and self-justification, respect-

ively). Finally, if the eighth book of the *De Bello Gallico* (written by Caesar's lieutenant Hirtius) and the *De Bello Alexandrino*, the *De Bello Africo* and the *De Bello Hispaniensi*<sup>110</sup> are included, the results might shed light on Caesar's relationship with his lieutenants.<sup>111</sup>

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110 These three works were allegedly written by Caesar's lieutenants; see also Suet. *Iul.* 56.

111 Compare for example Welch 2009.

# A

## WORD FREQUENCIES

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In this Appendix the occurrences of the selected words that pertain to swiftness are presented. Note that the instances of the selected words that do not mean swift are not included in the overviews. The identification of the agent ([R] for Romans and [E] for enemies) and the results for the three logical tests ([0] for false and [1] for true) are also included. If the result of any of the logical tests was [0] no further analysis was performed.

Table A.1: Occurrences of words meaning swift in the *De Bello Gallico* of Caesar. The agents are indicated by [R] for Romans and [E] for enemy. The three logical tests, distinguishing between real and unreal, physical and mental, and stationary and mobile contexts, are indicated by [Real?], [Phys?] and [Move?], respectively. Their results are represented as [0] indicating false and [1] indicating true.

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
1.7	<i>maturat ab urbe proficisci</i>	[Caesar] hurried to leave Rome	[R]	[1]	[1]	[1]
1.7	<i>quam maximis potest itineribus in Galliam ulteriorem contendit</i>	[Caesar] hurried with as long as possible marches to Gallia Ulterior	[R]	[1]	[1]	[1]
1.7	<i>quam maximis potest itineribus in Galliam ulteriorem contendit</i>	[Caesar] hurried with as long as possible marches to Gallia Ulterior	[R]	[1]	[1]	[1]
1.10	<i>ipse in Italiam magnis itineribus contendit</i>	[Caesar] himself hurried with long marches to Italy	[R]	[1]	[1]	[1]
1.10	<i>ipse in Italiam magnis itineribus contendit</i>	[Caesar] himself hurried with long marches to Italy	[R]	[1]	[1]	[1]
1.10	<i>cum eis quinque legionibus ire contendit</i>	[Caesar] hurried to march with these five legions	[R]	[1]	[1]	[1]
1.18	<i>celeriter concilium dimittit</i>	[Caesar] quickly dispersed the meeting	[R]	[1]	[1]	[0]
1.21	<i>ad eos contendit</i>	[Caesar] hurried to them	[R]	[1]	[1]	[1]
1.23	<i>Bibracte ire contendit</i>	[Caesar] hurried to go to Bibracte	[R]	[1]	[1]	[1]
1.26	<i>eaque tota nocte continenter ierunt</i>	[the Helvetii] marched the entire night uninterruptedly	[E]	[1]	[1]	[1]
1.26	<i>nullam partem noctis itinere intermisso in finis Lingonum die quarto perenerunt</i>	not interrupting the march any moment of the night [the Helvetii] arrived on the fourth day in the territory of the Lingones	[E]	[1]	[1]	[1]
1.27	<i>ad Rhenum finisque Germanorum contenderunt</i>	[the Verbigeni] hurried to the Rhenus and the territory of the Germans	[E]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
1.33	<i>inde in Italiam contenderent</i>	from there [the Cimbri and Teutoni] hurried to Italy	[-]			
1.33	<i>quam maturrime occurrendum putabat</i>	[Caesar] thought that he should advance as soon [as possible]	[R]	[0]		
1.37	<i>Caesar [...] maturandum sibi existimavit</i>	[Caesar] thought he should hurry	[R]	[0]		
1.37	<i>re frumentaria quam celerrime potuit comparata</i>	after [Caesar] prepared the grain provisions as quick as possible	[R]	[1]	[1]	[0]
1.37	<i>magnis itineribus ad Ariovistum contendit</i>	[Caesar] hurried to Ariovistus with long marches	[R]	[1]	[1]	[1]
1.37	<i>magnis itineribus ad Ariovistum contendit</i>	[Caesar] hurried to Ariovistus with long marches	[R]	[1]	[1]	[1]
1.38	<i>Ariovistum [...] ad occupandum Vesontionem [...] contendere</i>	that Ariovistus hurried to occupy Vesontio	[E]	[1]	[1]	[1]
1.38	<i>Huc Caesar magnis nocturnis diurnisque itineribus contendit</i>	Caesar hurried here with long night and daytime marches	[R]	[1]	[1]	[1]
1.38	<i>Huc Caesar magnis nocturnis diurnisque itineribus contendit</i>	Caesar hurried here with long night and daytime marches	[R]	[1]	[1]	[1]
1.40	<i>ut quam primum intellegere posset</i>	in order that [Caesar] would understand as soon [as possible]	[R]	[0]		
1.41	<i>cum iter non intermitteret</i>	while [Caesar] did not interrupt the march	[R]	[1]	[1]	[1]
1.48	<i>totidem numero pedites velocissimi</i>	[there were] the same number of very swift foot soldiers	[E]	[1]	[1]	[1]
1.48	<i>si quo erat [...] celerius recipiendum</i>	if one [of the Germans] had to retreat quickly	[E]	[0]		
1.48	<i>tanta erat horum exercitatione celeritas</i>	their [the Germans'] swiftness was through exercise so large	[E]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
1.48	<i>iubis equorum subleuati <u>cursum adaequarent</u></i>	while holding to the horses' manes [the Germans] matched [their] gallop	[E]	[1]	[1]	[1]
1.52	<i>hostes repente <u>celeriterque procurrerunt</u></i>	the enemies suddenly and quickly ran forward	[E]	[1]	[1]	[1]
1.52	<i>Germani <u>celeriter ex consuetudine sua phalange facta</u></i>	the Germans quickly through habit made their phalanx	[E]	[1]	[1]	[0]
1.53	<i>perpauci [...] <u>tranare contenderunt</u></i>	very few [of the Germans] hurried to swim to the other side	[E]	[1]	[1]	[1]
2.3	<i>Eo cum de improviso <u>celeriusque omni opinione uertisset</u></i>	When [Caesar] arrived there suddenly and more quickly than anyone expected	[R]	[1]	[1]	[1]
2.5	<i>flumen Axonam [...] <u>exercitum traducere maturauit</u></i>	[Caesar] hurried to ferry his army over the river Axona	[R]	[1]	[1]	[1]
2.7	<i>ad castra Caesaris omnibus copiis <u>contenderunt</u></i>	[the enemy] hurried with all their troops to Caesar's camp	[E]	[1]	[1]	[1]
2.9	<i>ad flumen Axonam <u>contenderunt</u></i>	[the enemy] hurried to the river Axona	[E]	[1]	[1]	[1]
2.10	<i>Caesar [...] <u>ad eos contendit</u></i>	Caesar hurried to them	[R]	[1]	[1]	[1]
2.11	<i>domum peruenire <u>properaret</u></i>	[the enemy] hurried to reach home	[E]	[1]	[1]	[1]
2.12	<i><u>magno itinere confecto ad oppidum Noviodunum contendit</u></i>	[Caesar] hurried to the oppidum Noviodunum in a long march	[R]	[1]	[1]	[1]
2.12	<i><u>magno itinere confecto ad oppidum Noviodunum contendit</u></i>	[Caesar] hurried to the oppidum Noviodunum in a long march	[R]	[1]	[1]	[1]
2.12	<i><u>Celeriter vineis ad oppidum actis</u></i>	[The Romans] quickly moved the mantelets to the oppidum	[R]	[1]	[1]	[1]
2.12	<i><u>celeritate Romanorum permoti</u></i>	confused by the swiftness of the Romans	[R]	[1]	[1]	[1]
2.19	<i><u>incredibili celeritate ad flumen decucurrerunt</u></i>	[the Nervii] ran with incredible swiftness down to the river	[E]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
2.19	<i>Eadem autem celeritate [...] ad nostra castra [...] contenderunt</i>	With the same swiftness [the Nervii] hurried to our camp	[E]	[1]	[1]	[1]
2.19	<i>Eadem autem celeritate [...] ad nostra castra [...] contenderunt</i>	With the same swiftness [the Nervii] hurried to our camp	[E]	[1]	[1]	[1]
2.20	<i>propter propinquitatem et celeritatem hostium</i>	because of the nearness and swiftness of the enemy	[E]	[1]	[1]	[1]
2.23	<i>Atrebates [...] celeriter [...] in flumen compulerunt</i>	[the Romans] pushed the Atrebates quickly into the river	[R]	[1]	[1]	[0]
2.23	<i>omnes Nervii [...] ad eum locum contenderunt</i>	all Nervii hurried to this place	[E]	[1]	[1]	[1]
2.24	<i>equites Treveri [...] domum contenderunt</i>	the Treveran horsemen hurried home	[R]	[1]	[1]	[1]
2.26	<i>nihil ad celeritatem sibi reliqui fecerunt</i>	they left nothing undone with regard to swiftness	[R]	[1]	[1]	[1]
2.26	<i>cursu incitato [...] ab hostibus conspiciantur</i>	[the legionaries] were seen running agitatedly from the enemies	[R]	[1]	[1]	[1]
2.31	<i>machinationes tanta celeritate promovere possent</i>	[the Romans] could move the machines forward with such swiftness	[R]	[1]	[1]	[1]
2.33	<i>Celeriter [...] ignibus significatione facta</i>	A signal was quickly made with fires	[R]	[1]	[1]	[0]
2.35	<i>in Italiam Illyricumque properabat</i>	[Caesar] hurried to Italy and Illyricum	[R]	[1]	[1]	[1]
3.3	<i>consilio celeriter convocato</i>	after quickly convening the counsel	[R]	[1]	[1]	[0]
3.3	<i>ad salutem contenderent</i>	[the Romans] should hurry towards safety	[R]	[0]		
3.5	<i>celeriter milites certiores facit</i>	[Galba] quickly informed the soldiers	[R]	[1]	[0]	
3.6	<i>in provinciam reverti contendit</i>	[Galba] hurried to return to the Province	[R]	[1]	[1]	[1]
3.8	<i>celeriter missis legatis</i>	[the Veneti] quickly send messengers	[E]	[1]	[1]	[0]
3.8	<i>Omni ora maritima celeriter ad suam sententiam perducta</i>	The entire maritime coast was quickly persuaded to their opinion	[E]	[1]	[0]	
3.9	<i>His rebus celeriter administratis</i>	These things quickly arranged	[R]	[1]	[1]	[0]



Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
3.9	<i>ipse [...] ad exercitum contendit</i>	[Caesar] himself hurried to the army	[R]	[1]	[1]	[1]
3.10	<i>ad bellum mobiliter <u>celeriterque</u> excitari</i>	[Gauls] are eagerly and quickly incited for war	[E]	[1]	[0]	
3.11	<i>Ipsae eo pedestribus copiis <u>contendit</u></i>	[Caesar] himself hurried there with the foot soldiers	[R]	[1]	[1]	[1]
3.13	<i>celeritate et pulsu renorum praestaret</i>	[the Roman fleet] was better due to [its] swiftness and [its] oar propulsion	[R]	[1]	[1]	[1]
3.15	<i>militēs [...] transcendere in hostium navis contendebant</i>	the soldiers hurried to board the enemy ships	[R]	[1]	[1]	[1]
3.15	<i>fuga salutem petere contenderunt</i>	[the Veneti] hurried to save themselves by fleeing	[E]	[1]	[1]	[1]
3.18	<i>ad castra <u>contendant</u></i>	[the Gauls] hurried to the camp	[E]	[1]	[1]	[1]
3.19	<i>Huc magno cursu contenderunt</i>	[the Gauls] hurried here running fast	[E]	[1]	[1]	[1]
3.19	<i>Huc magno cursu contenderunt</i>	[the Gauls] hurried here running fast	[E]	[1]	[1]	[1]
3.24	<i>ad hostium castra contendit</i>	[Crassus] hurried to the enemy camp	[R]	[1]	[1]	[1]
3.26	<i>celeriter ad [...] munitiones percenerunt</i>	[the Romans] arrived quickly at the defenses	[R]	[1]	[1]	[1]
3.28	<i>arbitratus id bellum <u>celeriter</u> confici posse</i>	[Caesar] thought that he could finish this war quickly	[R]	[0]		
3.28	<i>Nostri celeriter arma ceperunt</i>	Our [soldiers] quickly picked up arms	[R]	[1]	[1]	[0]
3.29	<i>Incredibili celeritate magno spatio paucis diebus confecto</i>	after [the Romans] completed with incredible swiftness an enormous distance in a few days	[R]	[1]	[1]	[0]
4.2	<i>ad quos se <u>celeriter</u> [...] recipiunt</i>	[the Germans] retreated to them quickly	[E]	[1]	[1]	[1]
4.4	<i>omni hoc itinere una nocte equitatu confecto</i>	[the Germans] finished that entire route in one night on horseback	[E]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
4.12	<i>celeriter</i> nostros perturbaverunt	[the enemy] quickly perturbed our [soldiers]	[E]	[1]	[1]	[0]
4.14	<i>celeriter</i> octo milium itinere confecto	[Caesar] quickly finished a march of 8 miles	[R]	[1]	[1]	[1]
4.14	<i>perterriti</i> [...] <i>celeritate</i> adventus nostri	[the Germans were] very frightened by the swiftness of our approach	[R]	[1]	[1]	[1]
4.14	<i>celeriter</i> arma capere potuerunt	[the Germans] could quickly take up arms	[E]	[1]	[1]	[0]
4.18	<i>in fines</i> Sugambrorum <i>contendit</i>	[Caesar] hurried into the territory of the Sugambri	[R]	[1]	[1]	[1]
4.20	<i>in Britanniam</i> proficisci <i>contendit</i>	[Caesar] hurried to leave for Britain	[R]	[1]	[1]	[1]
4.21	<i>seque</i> <i>celeriter</i> eo venturum	and that [Caesar] would come there quickly	[R]	[0]		
4.21	<i>ad se</i> <i>quam</i> <i>primum</i> revertatur	[Volusenus] returned to him [Caesar] as soon [as possible]	[R]	[1]	[1]	[1]
4.23	<i>celerem</i> atque <i>instabilem</i> motum <i>haberet</i>	[naval warfare] tends to entail quick and unstable events	[-]			
4.33	<i>se inde</i> <i>in curru</i> <i>citissime</i> <i>recipere</i> <i>consuerint</i>	[the Britons] had the habit of returning very quickly to the cart from there	[E]	[1]	[1]	[1]
4.34	<i>celeriter</i> <i>magna</i> <i>multitudine</i> [...] <i>coacta</i>	a large multitude [of Britons] assembled quickly	[E]	[1]	[1]	[0]
4.35	<i>celeritate</i> <i>periculum</i> <i>effugerent</i>	[the Britons] would escape danger with [their] swiftness	[E]	[0]		
4.35	<i>quantum</i> <i>cursu</i> <i>et viribus</i> <i>efficere</i> <i>potuerunt</i>	as much as [the Romans] could achieve with running and force	[R]	[1]	[1]	[1]
4.37	<i>in castra</i> <i>contenderent</i>	[the Romans] hurried to [their] camp	[R]	[1]	[1]	[1]
4.37	<i>celeriter</i> [...] <i>hominum</i> <i>circiter</i> <i>milia</i> <i>sex</i> <i>convenerunt</i>	quickly around 6000 [Morini] men assembled	[E]	[1]	[1]	[1]
5.1	<i>Ad</i> <i>celeritatem</i> <i>onerandi</i>	For speed of loading [of the ships]	[R]	[0]		

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
5.8	<i>remis contendit ut eam partem insulae caperet</i>	[Caesar] hurried rowing to reach that part of the island	[R]	[1]	[1]	[1]
5.8	<i>longarum navium cursum adaequarunt</i>	[the freighters] matched the speed of the battle ships	[R]	[1]	[1]	[1]
5.9	<i>ad hostes contendit</i>	[Caesar] hurried to the enemy	[R]	[1]	[1]	[1]
5.18	<i>ea celeritate atque eo impetu milites ierunt</i>	the soldiers went with such speed and impact	[R]	[1]	[1]	[1]
5.20	<i>Illi imperata celeriter fecerunt</i>	[The Trinobantes] quickly carried out the orders	[E]	[1]	[1]	[0]
5.25	<i>L. Plancum [...] celeriter in Carnutes proficisci iubet</i>	[Caesar] ordered L. Plancus to quickly leave for the Carnutes	[R]	[1]	[1]	[0]
5.26	<i>celeriter nostri arma cepissent</i>	[the Romans] quickly took up arms	[R]	[1]	[1]	[0]
5.29	<i>unam esse in celeritate positam salutem</i>	All [hope for] safety would be in swift	[R]	[0]		
5.33	<i>petere atque arripere properaret</i>	[every Roman] hurried to search and grab	[R]	[1]	[1]	[0]
5.35	<i>hostes velocissime refugiebant</i>	the enemies retreated very swiftly	[E]	[1]	[1]	[1]
5.39	<i>Nostri celeriter ad arma concurrunt</i>	Our [soldiers] quickly ran to arms	[R]	[1]	[1]	[0]
5.39	<i>omnem spem hostes in celeritate ponebant</i>	the enemies put all hope in swift	[E]	[1]	[1]	[1]
5.40	<i>turres admodum centum XX excitantur incredibili celeritate</i>	at least 120 towers were erected with incredible swiftness	[R]	[1]	[1]	[0]
5.43	<i>Hae celeriter ignem comprehenderunt</i>	[The houses] quickly caught fire	[-]			
5.46	<i>iubet [...] legionem [...] celeriterque ad se venire</i>	[Caesar] ordered [Crassus'] legion to come quickly to him	[R]	[1]	[1]	[1]
5.48	<i>unum communis salutis auxilium in celeritate ponebat</i>	[Caesar] put the only [hope] for the common safety in swiftness	[R]	[1]	[1]	[1]
5.48	<i>Venit magnis itineribus in Neroiorum finis</i>	[Caesar] arrived with long marches in the territory of the Nervii	[R]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
5.48	<i>se [...] celeriter adfore</i>	that he [Caesar] would arrive quickly	[R]	[0]		
5.49	<i>ad Caesarem omnibus copiis contendunt</i>	[the Gauls] hurried with all [their] troops to Caesar	[E]	[1]	[1]	[1]
5.49	<i>remittendum de celeritate existimabat</i>	[Caesar] thought that he could let go of [his] swiftness	[R]	[1]	[1]	[1]
5.51	<i>celeriter hostis in fugam dat</i>	[Caesar] quickly made the enemies flee	[R]	[1]	[1]	[0]
5.53	<i>incredibili celeritate [...] fama perfertur</i>	the rumour was spread with incredible swiftness	[-]			
6.1	<i>celeriter confecto per suos dilectu</i>	[Caesar] quickly completed the levy through his [lieutenants]	[R]	[1]	[1]	[0]
6.1	<i>celeritate et copiis docuit</i>	[Caesar] showed through [his] swiftness [of levying troops] and [the amount of] reinforcements	[R]	[1]	[1]	[0]
6.3	<i>in finis Nerviorum contendit</i>	[Caesar] hurried to the territory of the Nervii	[R]	[1]	[1]	[1]
6.3	<i>Eo celeriter confecto</i>	This [campaign against the Nervii] quickly completed	[R]	[1]	[1]	[1]
6.3	<i>magnisque itineribus eo pervenit</i>	and [Caesar] arrived there [in the territory of the Senones] with long marches	[R]	[1]	[1]	[1]
6.6	<i>celeriterque effectis pontibus</i>	[Caesar] completed the bridges quickly	[R]	[1]	[1]	[0]
6.7	<i>Celeriter haec ad hostis deferuntur</i>	These [things] were quickly reported to the enemy	[-]			
6.8	<i>Celeriter nostri [...] pila in hostis immittunt</i>	Our [soldiers] quickly threw [their] javelins to the enemy	[R]	[1]	[1]	[0]
6.28	<i>Magna vis eorum est et magna velocitas</i>	[The oxen] is very strong and very swift	[-]			
6.29	<i>si quid celeritate itineris [...] proficere posset</i>	if [Caesar] could achieve anything with a swift march	[R]	[0]		

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
6.30	<i>ad ipsum Ambiorigem contendit</i>	[Basilus] hurried to Ambiorix himself	[R]	[1]	[1]	[1]
6.30	<i>Celeriter contraque omnium opinionem confecto itinere</i>	[Basilus] completed this march quickly and beyond anyone's expectation	[R]	[1]	[1]	[1]
6.34	<i>Magnus undique numerus celeriter convenit</i>	A large number [of allies] quickly convened from everywhere	[R]	[1]	[1]	[1]
6.35	<i>ipsi Aduatucam contendunt</i>	[the Sugambri] themselves hurried to Aduatuca	[E]	[1]	[1]	[1]
6.37	<i>eodem illo quo venerant cursu in castra irrumpere conantur</i>	[the Germans] tried to break into the camp with the same speed as with which they had come	[E]	[1]	[1]	[1]
6.40	<i>Hinc celeriter detecti</i>	[The camp-followers] were quickly pushed down from there	[E]	[1]	[1]	[0]
6.40	<i>Alii [...] ut celeriter percurrant censent</i>	Some [Romans] thought they should quickly break out	[R]	[0]		
6.40	<i>neque eam quam prodesse aliis vim celeritatemque viderant imitari potuerant</i>	[the Romans] could not imitate the force and swiftness that they had seen that helped the other [Romans]	[R]	[1]	[1]	[1]
7.1	<i>Eae res in Galliam Transalpinam celeriter perferuntur</i>	These things quickly spread to Transalpine Gaul	[-]			
7.3	<i>Celeriter ad omnis Galliae civitates fama perfertur</i>	This rumour spread quickly to all the other tribes of Gaul	[-]			
7.4	<i>Celeriter sibi [...] adiungit</i>	[Vercingetorix] quickly added [these tribes] to his [cause]	[E]	[1]	[0]	
7.4	<i>certum numerum militum ad se celeriter adduci iubet</i>	[Vercingetorix] ordered that a certain number of soldiers was brought to him quickly	[E]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
7.5	<i>His suppliciiis celeriter coacto exercitu</i>	Through these punishments [Vercingetorix] quickly assembled an army	[E]	[1]	[1]	[1]
7.6	<i>si ipse ad exercitum contenderet</i>	if [Caesar] himself would hurry to [his] army	[R]	[0]		
7.7	<i>in provinciam Narbonem versus eruptionem facere contendit</i>	[Lucerius] hurried to launch an attack into the Province towards Narbo	[E]	[1]	[1]	[1]
7.8	<i>Celeriter haec fama [...] perferuntur</i>	This rumour spread quickly	[-]			
7.9	<i>quam maximis potest itineribus Viennam pervenit</i>	[Caesar] arrived in Vienna with as long as possible marches	[R]	[1]	[1]	[1]
7.9	<i>neque diurno neque nocturno itinere intermisso [...] in Lingones contendit</i>	[Caesar] interrupting his march neither by day nor by night hurried into the territory of the Lingones	[R]	[1]	[1]	[1]
7.9	<i>neque diurno neque nocturno itinere intermisso [...] in Lingones contendit</i>	[Caesar] interrupting his march neither by day nor by night hurried into the territory of the Lingones	[R]	[1]	[1]	[1]
7.9	<i>ut [...] celeritate praecurreret</i>	in order that through swiftness [Caesar] outran [news]	[R]	[1]	[1]	[1]
7.11	<i>ut quam primum iter faceret</i>	in order that [Caesar] set out marching as soon [as possible]	[R]	[1]	[1]	[1]
7.12	<i>ut celeritate reliquas res conficeret</i>	in order that [Caesar] completed this other business with swiftness	[E]	[1]	[1]	[0]
7.15	<i>celeriter amissa recipiendos confidebant</i>	[the Gauls] trusted that they would have quickly recovered what they had lost	[E]	[0]		
7.17	<i>celeriter quod habuerunt consumpserunt</i>	[the Romans] quickly consumed what [provisions] they had	[R]	[1]	[1]	[0]
7.18	<i>celeriter per exploratores adventu Caesaris cognito</i>	[the Gauls] quickly came to know through scouts about Caesar's arrival	[E]	[1]	[0]	

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
7.18	<i>Caesar celeriter sarcinas conferri, arma expediri iussit</i>	Caesar ordered to quickly assemble the packs and take up arms	[R]	[1]	[1]	[0]
7.20	<i>quod eius discessu Romani tanta opportunitate et celeritate venissent</i>	because on his departure the Romans had come with such advantage and speed	[R]	[1]	[1]	[1]
7.24	<i>celeriter factum est ut alii eruptionibus resisterent</i>	it was quickly arranged that other [soldiers] resisted the attacks	[R]	[1]	[0]	
7.27	<i>murumque celeriter compleverunt</i>	and [the Romans] quickly manned the wall	[R]	[1]	[1]	[1]
7.29	<i>Id tamen se celeriter maioribus commodis sanaturum</i>	[Vercingetorix] would however quickly remedy this [failure] with greater advantages	[E]	[0]		
7.31	<i>His rebus celeriter id quod Avarici deperierat expletur</i>	With these things [Vercingetorix] quickly compensated for what was lost at Avaricum	[E]	[1]	[1]	[0]
7.34	<i>cohortatus Aeduos [...] equitatumque omnem et peditum milia X sibi celeriter mitterent</i>	[Caesar] admonished the Aedui to quickly send him their entire cavalry and 10,000 foot soldiers	[R]	[0]		
7.35	<i>Celeriter effecto opere legionibusque traductis et loco castris idoneo delecto</i>	[Caesar] quickly completed the work, he [quickly] ferried the legions and [quickly] selected a proper location for the camp	[R]	[1]	[1]	[1]
7.35	<i>Vercingetorix [...] magnis itineribus antecessit</i>	Vercingetorix moved forward with long marches	[E]	[1]	[1]	[1]
7.37	<i>Celeriter adulescentibus et oratione magistratus et praemio deductis</i>	The young men were quickly convinced by both the speech and the bribe of the magistrate	[E]	[1]	[0]	
7.38	<i>non necesse sit nobis Gergoviam contendere</i>	it is not a necessity for us to hurry to Gergovia	[E]	[0]		
7.40	<i>res posita in celeritate videbatur</i>	the case seemed to depend on swiftness	[R]	[0]		

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
7.45	<i>hoc una celeritate posse mutari</i>	that this could be changed only with swiftness	[R]	[0]		
7.46	<i>Milites [...] celeriter ad munitionem perveniunt</i>	The soldiers quickly arrived at the fortification	[R]	[1]	[1]	[1]
7.46	<i>tanta fuit in castris capiendis celeritas</i>	The swiftness of capturing the camp was so large	[R]	[1]	[1]	[1]
7.47	<i>elati spe celeris victoriae</i>	[the Romans were] glad through hope on a quick victory	[R]	[0]		
7.48	<i>magno concursu eo contenderunt</i>	[the Gauls] hurried there with a large rush	[E]	[1]	[1]	[1]
7.48	<i>magno concursu eo contenderunt</i>	[the Gauls] hurried there with a large rush	[E]	[1]	[1]	[1]
7.49	<i>ut cohortis ex castris celeriter educeret</i>	so that [Caesar] could lead out the cohorts quickly from the camp	[R]	[1]	[1]	[1]
7.56	<i>Caesar maturandum sibi censuit</i>	Caesar decided that he had to hurry	[R]	[1]	[0]	
7.56	<i>magis diurnis nocturnisque itineribus confectis</i>	[Caesar] completed long daytime and nightly marches	[R]	[1]	[1]	[1]
7.58	<i>Deprensas navibus circiter quinquaginta celeriterque coniunctis</i>	[Labienus] seized around 50 ships and quickly bound them together	[R]	[1]	[1]	[0]
7.59	<i>Caesarem inopia frumenti coactum in provinciam contendisse</i>	that Caesar forced by the lack of grain would hurry to the Province	[R]	[0]		
7.61	<i>exercitus equitatusque [...] celeriter transmittitur</i>	[Labienus] transferred the army and cavalry quickly	[R]	[1]	[1]	[1]
7.64	<i>omnis equites [...] celeriter convenire iubet</i>	[Vercingetorix] ordered that all horsemen quickly assembled	[E]	[1]	[1]	[1]
7.68	<i>celeriterque impedimenta ex castris educi et se subsequi iussit</i>	and [Vercingetorix] ordered that the baggage was led out of the camp quickly and that they followed him [quickly]	[E]	[1]	[1]	[1]
7.83	<i>ad ea [...] castra contendit</i>	[Vercassivellaunus] hurried to that camp	[E]	[1]	[1]	[1]



Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
7.87	<i>eo quo Labienum miserat contendit</i>	[Caesar] hurried to where he had sent Labienus	[R]	[1]	[1]	[1]

Table A.2: Occurrences of words meaning swift in the *Iugurtha* of Sallustius. The agents are indicated by [R] for Romans and [E] for enemy. The three logical tests, distinguishing between real and unreal, physical and mental, and stationary and mobile contexts, are indicated by [Real?], [Phys?] and [Move?], respectively. Their results are represented as [0] indicating false and [1] indicating true.

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
8	<i>si properantius pergeret</i>	if [Iugurtha] proceeded too quickly	[E]	[0]		
13	<i>Romam contendit</i>	[Adherbal] hurried to Rome	[R]	[1]	[1]	[1]
17	<i>Genus hominum salubri corpore, <u>velox</u></i>	[the African] people has a healthy body, is quick	[E]	[1]	[1]	[1]
19	<i>alio <u>properare</u> tempus monet</i>	time urges [Sallustius] to hurry to another [subject]	[-]			
21	<i>maxime <u>festinans</u> tempus legatorum antecapere</i>	[Iugurtha] hurrying extremely to pre-empt the legates	[E]	[1]	[1]	[0]
22	<i>Legati in Africam <u>maturantes</u> veniunt</i>	The legates came quickly to Arfica	[R]	[1]	[1]	[1]
25	<i>quam <u>primum</u> Adherbali <u>subveniendum</u></i>	that Adherbal had to be helped as soon [as possible]	[R]	[0]		
25	<i>quam <u>ocissime</u> ad provinciam <u>adcedat</u></i>	[Iugurtha] had to come to the province as quickly [as possible]	[E]	[0]		
36	<i>Albinus [...] <u>conneatum</u>, <u>stipendium</u> <u>aliaque</u>, <u>quae</u> <u>militibus</u> <u>usui</u> <u>forent</u>, <u>maturat</u> <u>in</u> <u>Africam</u> <u>portare</u></i>	Albinus hurried to get provision, wages and all else what the soldiers needed, into Africa	[R]	[1]	[1]	[0]
36	<i>ex <u>tanta</u> <u>properantia</u></i>	from these swift actions	[R]	[1]	[1]	[1]
37	<i><u>magnisque</u> <u>itineribus</u> <u>hieme</u> <u>aspera</u> <u>pervenit</u> <u>ad</u> <u>oppidum</u> <u>Suthul</u></i>	[Aulus] arrived despite the harsh winter with long marches at the oppidum Suthul	[R]	[1]	[1]	[1]
37	<i><u>aliaque</u> <u>quae</u> <u>incepto</u> <u>usui</u> <u>forent</u> <u>properare</u></i>	[Albinus] hurried [to prepare] all other things that were required for his undertaking	[R]	[1]	[1]	[0]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
39	<i>denique omnibus modis festinare</i>	in short [Albinus] hurried [the preparations] in every [possible] way	[R]	[1]	[1]	[0]
52	<i>plerosque velocitas et regio hostibus ignara tutata sunt</i>	[the Numidians'] swiftness and [their] enemies' unfamiliarity with the region saved most of them	[E]	[1]	[1]	[1]
52	<i>legatus ad flumen [...] festinans pergit</i>	the legate hurriedly proceeded to the river	[R]	[1]	[1]	[1]
53	<i>properantes arma capiunt</i>	[the Romans] quickly took up arms	[R]	[1]	[1]	[0]
55	<i>omnibus modis festinare</i>	[Metellus] hurried in every [possible] way	[R]	[1]	[1]	[1]
56	<i>magnis itineribus Metellum antevernit</i>	[Iugurtha] with long marches arrived before Metellus	[E]	[1]	[1]	[1]
56	<i>ni Marius signa inferre atque evadere oppido properavisset</i>	if Marius had not hurried to bring forward the standards and to evacuate the town	[R]	[1]	[1]	[1]
58	<i>Igitur equitatum omnem ad castra propere misit</i>	[Metellus] therefore sent quickly the entire cavalry to the camp	[R]	[1]	[1]	[1]
58	<i>alii in angustiis ipsi sibi properantes officerent</i>	some [Numidians] stood in the way of each other hurrying through narrow [places]	[E]	[1]	[1]	[1]
59	<i>relicui cito subveniunt</i>	the other [Romans] quickly came to help	[R]	[1]	[1]	[1]
62	<i>Metellus propere cunctos senatorii ordinis ex hibernis adcersi iubet</i>	Metellus quickly ordered that all of senatorial rank were summoned from [their] winter quarters	[R]	[1]	[1]	[0]
64	<i>ne festinaret abire</i>	that [Marius] should not hurry to leave	[R]	[0]		
64	<i>animo cupienti nihil satis festinatur</i>	for a craving mind nothing hurries enough	[-]			
66	<i>parare omnia, festinare, cogere exercitum [...]</i>	[Iugurtha] hurried to prepare everything, assemble an army	[E]	[1]	[1]	[1]
68	<i>ultum ire iniurias festinat</i>	[Metellus] hurried to avenge [these] injustices	[R]	[1]	[1]	[0]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
68	<i>milities, fessos itineris magnitudine</i>	the soldiers [were] tired from the long march	[R]	[1]	[1]	[1]
69	<i>alii ad portas festinare</i>	other [Roman horsemen] hurried to the gates	[R]	[1]	[1]	[1]
71	<i>propere cognitis insidiis ad regem pergit</i>	[a Numidian], knowing about the ambush, quickly went to the king	[E]	[1]	[1]	[1]
73	<i>ad integrum bellum cuncta parat festinatque.</i>	[Metellus] hurried to prepare everything for the renewed war	[R]	[1]	[1]	[0]
76	<i>simulabat sese negoti gratia properare</i>	[Iugurtha] pretended that he hurried due to business	[E]	[0]		
76	<i>vitare posse celeritate putabat</i>	[Iugurtha] thought that he could avoid [treachery] by swiftness	[E]	[0]		
76	<i>Contra haec oppidani festinare, parare;</i>	The inhabitants of the oppidum [Thala] hurried to prepare counter measures	[E]	[1]	[1]	[0]
77	<i>Ni id festinaret</i>	If [Metellus] would not hurry with this	[R]	[0]		
81	<i>callidus id modo festinabat, Bocchi pacem imminuere</i>	[Iugurtha] cleverly hurried for this, [viz.] to detract Bocchus' peace	[E]	[1]	[1]	[0]
86	<i>propere conneatu, stipendio, armis aliisque utilibus navis onerat</i>	[Marius] loaded quickly provisions, wages, arms and all other necessities onto the ships	[R]	[1]	[1]	[0]
91	<i>noctemque totam itinere facto consedit</i>	[Marius] set up camp after marching the entire night	[R]	[1]	[1]	[1]
91	<i>velocissimos pedites cursu tendere ad Capsam [...] iubet</i>	[Marius] ordered the fastest foot soldiers to make a run for Capsa	[R]	[1]	[1]	[1]
91	<i>velocissimos pedites cursu tendere ad Capsam [...] iubet</i>	[Marius] ordered the fastest foot soldiers to make a run for Capsa	[R]	[1]	[1]	[1]
91	<i>ipse intentus propere sequi</i>	[Marius] himself, ready for battle, followed quickly	[R]	[1]	[1]	[1]

Chapter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
93	<i>Marium propere adit</i>	[a Ligus] approached Marius quickly	[R]	[1]	[1]	[1]
93	<i>quinque quam velocissimos delegit</i>	[Marius] chose the five fastest [soldiers]	[R]	[1]	[1]	[1]
96	<i>ea properantius quam aes mutuom reddere</i>	[Sulla] repaid [favours] quicker than a loan	[R]	[1]	[0]	
97	<i>quam primum in Numidiam copias adduceret</i>	that [Bocchus] would send his troops to Numidia as soon [as possible]	[E]	[0]		
98	<i>cunctos pleno gradu in collem subducit</i>	[Marius] led all [soldiers] in full [military] step up the hill	[R]	[1]	[1]	[1]
101	<i>speculatores citi sese ostendunt</i>	scouts quickly showed themselves	[E]	[1]	[1]	[1]
102	<i>nunc, quando per illam licet, festina</i>	now, as long as she [Fortuna] allows, you should hurry	[E]	[0]		
105	<i>itineris properandi causa</i>	in order to hurry the march	[R]	[1]	[1]	[1]
106	<i>nocturno itinere fessis omnibus</i>	all [Romans were] tired of the nocturnal march	[R]	[1]	[1]	[1]
112	<i>properato itinere [...] redit</i>	[Aspar] returned in a quick march	[E]	[1]	[1]	[1]

Table A.3: Occurrences of words meaning swift in the letters of Cicero. The agents are indicated by [R] for Romans and [E] for enemy. The three logical tests, distinguishing between real and unreal, physical and mental, and stationary and mobile contexts, are indicated by [Real?], [Phys?] and [Move?], respectively. Their results are represented as [0] indicating false and [1] indicating true.

Letter	Text	Translation	Agent	[Real?]	[Phys?]	[Move?]
Fam. 15.1	<i>nisi exercitum [...] mature in has provincias miseritis</i>	if you [the Senate] will not send an army quickly in these [Cilicia and Syria] provinces	[R]	[0]		
Fam. 15.2	<i>propter cottidianos ex Syria nuntios ut quam primum exercitum ad Ciliciae fines adducerem</i>	due to daily messages from Syria, [to ask] that I [Cicero] would lead [my] army to Cilicia as soon [as possible]	[R]	[0]		
Att. 5.20	<i>inde ad Amanum contendī</i>	from there I [Cicero] hurried towards the Amanus	[R]	[1]	[1]	[1]
Fam. 15.4	<i>idque ut maturaret hortatus sum</i>	I [Cicero] urged [King Deiotarus] to hurry with this [moving his army to Cilicia]	[R]	[0]		
Fam. 15.4	<i>quam potui maximis itineribus ad Amanum exercitum duxi</i>	I [Cicero] led my army to Amanus with the longest possible marches	[R]	[1]	[1]	[1]

## B

INSTANCES OF *VIGILIA*Table B.1: All occurrences of time indications with a numeral and *vigilia* (watch) in the *De Bello Gallico*.

	<b>Text</b>	<b>Qualification</b>	<b>Type</b>
1.12	<i>de tertia vigilia</i> (from the third watch)	<i>de</i>	ordinal
1.21	<i>de tertia vigilia</i> (from the third watch)	<i>de</i>	ordinal
1.21	<i>de quarta vigilia</i> (from the fourth watch)	<i>de</i>	ordinal
1.40	<i>de quarta vigilia</i> (from the fourth watch)	<i>de</i>	ordinal
1.41	<i>de quarta vigilia</i> (from the fourth watch)	<i>de</i>	ordinal
2.11	<i>secunda vigilia</i> (at the second watch)	-	ordinal
2.33	<i>tertia vigilia</i> (at the third watch)	-	ordinal
4.23	<i>tertia fere vigilia</i> (at the third watch approximately)	<i>fere</i>	ordinal
5.9	<i>de tertia vigilia</i> (from the third watch)	<i>de</i>	ordinal
5.23	<i>secunda inita [...] vigilia</i> (when the second watch started)	<i>inita</i>	ordinal
7.3	<i>ante primam confectam vigiliam</i> (before the first watch ended)	<i>ante,</i> <i>confectam</i>	ordinal
7.24	<i>paulo ante tertiam vigiliam</i> (a little bit before the third watch)	<i>paulo ante</i>	ordinal
7.58	<i>tertia vigilia</i> (at the third watch)	-	ordinal
7.60	<i>prima confecta vigilia</i> (when the first watch ended)	<i>confecta</i>	ordinal
7.71	<i>secunda vigilia</i> (at the second watch)	-	ordinal
7.83	<i>prima vigilia</i> (at the first watch)	-	ordinal

INSTANCES OF *HORA*Table C.1: All occurrences of time indications using a numeral and *hora* (hour) in the *De Bello Gallico*.

	<b>Text</b>	<b>Qualification</b>	<b>Type</b>
1.26	<i>ab hora septima</i> (from the seventh hour)	<i>ab</i>	ordinal
3.5	<i>amplius horis sex</i> (more than six hours)	<i>amplius</i>	cardinal
3.15	<i>ab hora fere quarta</i> (from the fourth hour approximately)	<i>ab, fere</i>	ordinal
4.23	<i>hora circiter diei quarta</i> (around the fourth hour of the day)	<i>circiter</i>	ordinal
4.23	<i>ad horam nonam</i> (until the ninth hour)	<i>ad</i>	ordinal
4.37	<i>amplius horis quattuor</i> (more than four hours)	<i>amplius</i>	cardinal
5.35	<i>ad horam octavam</i> (until the eighth hour)	<i>ad</i>	ordinal
5.42	<i>minus horis tribus</i> (less than three hours)	<i>minus</i>	cardinal
5.46	<i>hora circiter undecima diei</i> (around the eleventh hour of the day)	<i>circiter</i>	ordinal
5.47	<i>hora circiter tertia</i> (around the third hour)	<i>circiter</i>	ordinal
5.51	<i>ante horam tertiam</i> (before the third hour)	<i>ante</i>	ordinal
5.53	<i>post horam nonam diei</i> (after the ninth hour of the day)	<i>post</i>	ordinal
6.35	<i>tribus horis</i> (three hours)	-	cardinal
7.41	<i>tribusque horis noctis</i> (three night hours)	-	cardinal



## D

INSTANCES OF *PASSUS*

Table D.1: All occurrences of distance indications using a numeral and *passus* (pace) in the *De Bello Gallico*. Note that *milia passuum* and *milibus passuum* are translated as mile.

	Text	Qualification	Type
1.2	<i>milia passuum CCXL</i> (240 miles)	-	cardinal
1.2	[ <i>milia passuum</i> ] <i>CLXXX</i> (180 miles)	-	cardinal
1.8	<i>milia passuum decem novem</i> (19 miles)	-	cardinal
1.15	<i>non amplius quinis aut senis milibus passuum</i> (not more than 5 or 6 miles at a time)	<i>non amplius</i>	distributive
1.21	<i>milia passuum [...] octo</i> (8 miles)	-	cardinal
1.22	<i>non longius mille et quingentis passibus</i> (not longer than 1500 paces)	<i>non longius</i>	cardinal
1.22	<i>milia passuum tria</i> (3 miles)	-	cardinal
1.23	<i>non amplius milibus passuum XVIII</i> (not more than 18 miles)	<i>non amplius</i>	cardinal
1.25	<i>circiter mille passuum</i> (around a thousand paces)	<i>circiter</i>	cardinal
1.41	<i>milibus passuum quattuor et XX</i> (24 miles)	-	cardinal
1.43	<i>passibus ducentis</i> (200 paces)	-	cardinal
1.48	<i>milibus passuum sex</i> (6 miles)	-	cardinal
1.48	<i>milibus passuum duobus</i> (2 miles)	-	cardinal
1.49	<i>circiter passus sescentos</i> (around 600 paces)	<i>circiter</i>	cardinal
1.49	<i>circiter passus sescentos</i> (around 600 paces)	<i>circiter</i>	cardinal
1.53	<i>milia passuum [...] circiter quinque</i> (around 5 miles)	<i>circiter</i>	cardinal
2.6	<i>milia passuum octo</i> (8 miles)	-	cardinal
2.7	<i>ab milibus passuum minus duobus</i> (less than about 2 miles)	<i>ab, minus</i>	cardinal
2.7	<i>amplius milibus passuum octo</i> (more than 8 miles)	<i>amplius</i>	cardinal
2.8	<i>circiter passuum quadringentorum</i> (around 400 paces)	<i>circiter</i>	cardinal
2.13	<i>circiter milia passuum quinque</i> (around 5 miles)	<i>circiter</i>	cardinal
2.16	<i>non amplius milia passuum X</i> (not more than 10 miles)	<i>non amplius</i>	cardinal
2.18	<i>passus circiter ducentos</i> (around 200 paces)	<i>circiter</i>	cardinal
3.19	<i>circiter passus mille</i> (around a thousand paces)	<i>circiter</i>	cardinal
4.3	<i>circiter milia passuum sescenta</i> (around 600 miles)	<i>circiter</i>	cardinal

	<b>Text</b>	<b>Qualification</b>	<b>Type</b>
4.10	<i>neque longius [...] milibus passuum LXXX</i> (not further than 80 miles)	<i>neque longius</i>	cardinal
4.11	<i>non amplius passuum XII milibus</i> (not more than 12 miles)	<i>non amplius</i>	cardinal
4.11	<i>non longius milibus passuum quattuor</i> (not further than 4 miles)	<i>non longius</i>	cardinal
4.22	<i>ab milibus passuum octo</i> (about 8 miles)	<i>ab</i>	cardinal
4.23	<i>circiter milia passuum septem</i> (around 7 miles)	<i>circiter</i>	cardinal
5.2	<i>circiter milium passuum XXX</i> (around 300 miles)	<i>circiter</i>	cardinal
5.9	<i>milia passuum circiter XII</i> (around 12 miles)	<i>circiter</i>	cardinal
5.11	<i>circiter milia passuum LXXX</i> (around 80 miles)	<i>circiter</i>	cardinal
5.13	<i>circiter milia passuum quingenta</i> (around 50 miles)	<i>circiter</i>	cardinal
5.13	<i>milia passuum octingenta</i> (800 miles)	-	cardinal
5.13	<i>vicies centum milium passuum</i> (200 miles)	-	cardinal
5.24	<i>milibus passuum centum</i> (100 miles)	-	cardinal
5.27	<i>milia passuum circiter quinquaginta</i> (around 50 miles)	<i>circiter</i>	cardinal
5.32	<i>a milibus passuum circiter duobus</i> (about around 2 miles)	<i>a, circiter</i>	cardinal
5.46	<i>milia passuum XXV</i> (25 miles)	-	cardinal
5.47	<i>milia passuum XX</i> (20 miles)	-	cardinal
5.47	<i>tria milia pasuum</i> (3 miles)	-	cardinal
5.49	<i>circiter milia passuum quattuor</i> (around 4 miles)	<i>circiter</i>	cardinal
5.53	<i>milia passuum[...] circiter LX</i> (around 60 miles)	<i>circiter</i>	cardinal
5.53	<i>neque longius milia passuum octo</i> (not further than 8 miles)	<i>neque longius</i>	cardinal
6.7	<i>a milibus passuum quindecim</i> (15 miles)	<i>a</i>	cardinal
6.7	<i>mille passuum</i> (a mile)	-	n.a.
6.35	<i>triginta milibus passuum</i> (30 miles)	-	cardinal
6.36	<i>milibus passuum tribus</i> (3 miles)	-	cardinal
7.3	<i>milium passuum circiter centum LX</i> (around 160 miles)	<i>circiter</i>	cardinal
7.16	<i>milia passuum XVI</i> (16 miles)	-	cardinal
7.38	<i>milia passuum circiter XXX</i> (around 30 miles)	<i>circiter</i>	cardinal
7.40	<i>milia passuum XXV</i> (25 miles)	-	cardinal
7.46	<i>mille CC passus</i> (1200 paces)	-	cardinal
7.60	<i>III milia passuum</i> (4 miles)	-	cardinal
7.66	<i>circiter milia passuum X</i> (around 10 miles)	<i>circiter</i>	cardinal
7.69	<i>circiter milia passuum III</i> (around 3 miles)	<i>circiter</i>	cardinal
7.69	<i>XI milia passuum</i> (11 miles)	-	cardinal
7.70	<i>tria milia passuum</i> (3 miles)	-	cardinal

	<b>Text</b>	<b>Qualification</b>	<b>Type</b>
7.74	<i>XIII milia passuum</i> (14 miles)	-	cardinal
7.79	<i>non longius mille passibus</i> (not further than a mile)	<i>non longius</i>	cardinal
7.79	<i>tria milia passuum</i> (3 miles)	-	cardinal

# E

## MULTI-HOUR MARCHES

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In this Appendix discussions are presented for all the marches as presented in Table 3. These include all the multi-hour marches from all three investigated authors; Caesar, Sallustius and Cicero. Each discussion addresses the method of determining the marching distance and duration of the respective march. Additionally, the assumed PDFs and the calculation procedure of the marching speed are also included.

**Caes. Gal. 1.21**

While Caesar is following the migrating Helvetii in the summer of 58 BCE, at one point the Helvetii put up their camp eight miles from the Romans at the foot of a hill. Caesar planned for a surprise attack, sending forward Labienus with two legions to occupy the hill, and pulling out himself a couple of hours later. At sunrise he progressed until 1500 paces from the enemy camp.

*Eodem die ab exploratoribus certior factus hostis sub monte consedisse milia passuum ab ipsius castris octo [...] Ipse de quarta vigilia eodem itinere quo hostes ierant ad eos contendit [...] Prima luce, cum summus mons a [Lucio] Labieno teneretur, ipse ab hostium castris non longius mille et quingentis passibus abesset*

That same day [Caesar] was informed by [his] scouts that the enemy set up camp at the foot of a hill eight miles from his own camp [...] From the fourth watch [Caesar] himself hurried towards the enemy along the same route as they had taken [...] At first light, while the highest [part of the] hill was occupied by [Lucius] Labienus, [Caesar] himself was not further than 1500 paces from the enemy camp  
(Caes. Gal. 1.21-22)

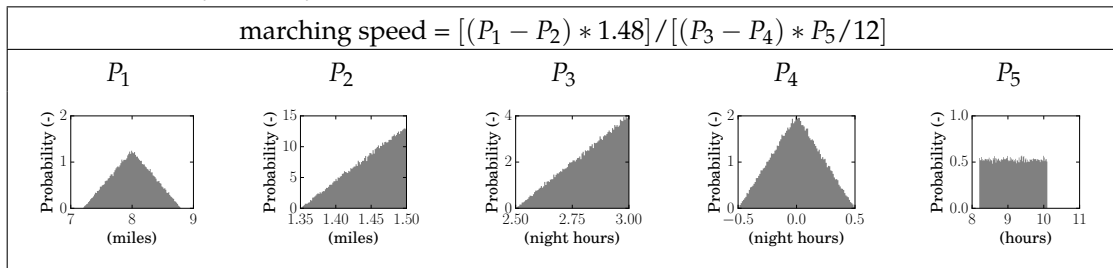
In order to calculate the total distance which Caesar travelled, two reported distances need to be included, (1) the distance between the Roman and Helvetian camp, *milia passuum octo* (8 miles) and (2) the remaining distance between Caesar's column and the Helvetian camp, *non longius mille et quingentis passibus* (not further than 1500 paces). The first distance is not qualified, and a symmetrical triangular PDF covering a 10% variation (between 7.2 and 8.8 miles) is assumed. The second distance is qualified by the comparative qualifier *non longius* (not further than), and therefore an asymmetric triangular PDF with 10% variation at shorter distances (rising from 1350 paces to 1500 paces) is assumed.

Regarding the marching duration, it is firstly assumed that the events took place in high summer, i.e. seasonal period P4 or P5 (see Figure 6 on page 31); the events occurred towards the end of the Helvetian campaign of that year, after which a large enough part of the military season remained for the campaign against Ariovistus. Secondly, the events took place close to Bibracte (coordinates: 46.932028, 4.048455) in central modern-day France.<sup>112</sup> At these latitudes and time of year, the length of the night varied between 8.2 and 10.1 hours, and a uniform PDF between this minimum and maximum is assumed. Regarding the time of departure, Caesar informs us that he left *de quarta vigilia* (from the fourth watch). Since Caesar uses the comparative qualification *de* (from), an asymmetric triangular PDF from the start of the fourth watch to half an hour shorter is assumed. Regarding the time of arrival, Caesar uses

112 Caes. Gal. 1.23.

the expression *prima luce* (at first light). As this expression is not qualified, a symmetrical triangular PDF covering a half night hour variation around sunrise is assumed for the time of arrival. In Table E.1 the calculation of the marching speed is presented, including the assumed PDFs.

Table E.1: Calculation of the marching speed for Caes. *Gal.* 1.21, including the probability density functions of variables used.



[To go back to Table 3 click [here](#).]

**Caes. Gal. 2.12**

After the battle with the Belgae at the river Axona in 57 BCE, Caesar hurried towards Noviodunum, the main oppidum of the Suessiones.

*Postridie eius diei Caesar, prius quam se hostes ex terrore ac fuga reciperent, in fines Suessionum, qui proximi Remis erant, exercitum duxit et magno itinere confecto ad oppidum Noviodunum contendit.*

On the day following that day, before the enemy could recover from their terror and flight, Caesar led his army into the territories of the Suessiones, who are closest to the Remi, and hurried by completing a long march to the oppidum Noviodunum.

(Caes. Gal. 2.12)

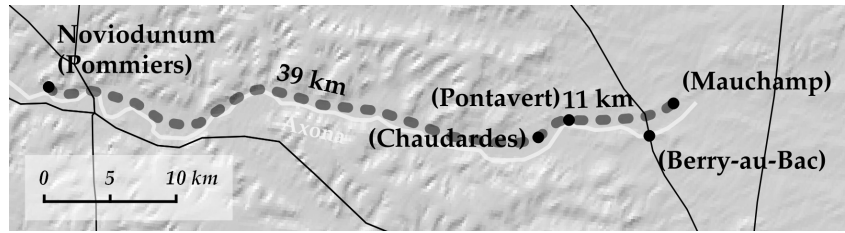
To establish the marching distance, both the point of departure and arrival are to be established. The point of departure is the battle ground where Caesar faced the combined forces of the Belgae at the river Axona (Aisne).<sup>113</sup> Whereas Napoleon (1866, II, 99-100) decides on this location to be near Mauchamp, Holmes (1911, 659-66) maintains that Caesar crossed the Axona at either Berry-au-Bac or Pontavert, setting up camp at either Mauchamp or Chaudardes, respectively. Pelling (1981, 742-7) likewise concludes that these are the two most authoritative possibilities but that no conclusive evidence for either of them exists. Both locations (Mauchamp and Chaudardes) will be included in the calculations. From here Caesar marched to Noviodunum, the (main) oppidum of the Suessiones.<sup>114</sup> Also the location of Noviodunum is not conclusively established. However, it is assumed to be close to modern Soissons. Holmes (1911, 464-6) convincingly argues for the site at Pommiers to be identified with Noviodunum; the Gallo-Roman capital of the Suessiones (Soissons) was situated in a nearby valley (similarly to the Gallo-Roman capitals close to Gergovia or Bibracte) and excavations at Pommiers identify it as an important Gallic oppidum in the first century BCE. Even evidence of a Roman military camp has been revealed close to the site at Pommiers.<sup>115</sup> This location is therefore assumed in this study. Map E.1 presents the probable march of Caesar from the battlefield at the Axona to Noviodunum. It is noted that the proposed route roughly follows the river. The route from Mauchamp is 50 km to Noviodunum, that is 11 km longer than the route from Chaudardes. It is concluded that the marching distance was either 50 or 39 km and a uniform PDF is assumed between these two values, excluding the standard GIS maps variation of -10% and +20% (see Table E.2).

Regarding the duration of the march, Caesar uses two adjuncts, *postridie eius die* (the day after that day) and *magno itinere confecto* (by completing a large march). Since Caesar uses the singular *magno itinere* (by a long march)

113 Caes. Gal. 2.1-2.11.

114 Caes. Gal. 2.12.

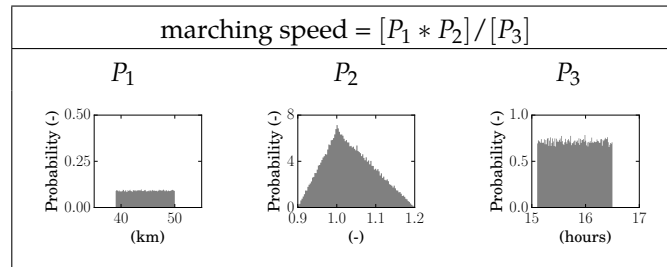
115 Holmes 1911, 466.



Map E.1: Gaul with Caesar's march from the battlefield at the Axona to Noviodunum (Caes. *Gal.* 2.12).

in this instance, as opposed to the more widely employed adjunct *magnis itineribus* (by long marches), it is assumed that he completed the march within one day.<sup>116</sup> Moreover, the combination of this adjunct with the singular *postridie eius die* (the day after that day) further corroborates this interpretation. Indeed Holmes (1911, 668-70) discusses the issue at length, concluding that it is most probable that Caesar reached Noviodunum on the same day. The march was in the neighbourhood of Soissons (coordinates: 49.382340, 3.327716). The seasonal period is assumed to be high summer, P4 or P5, since it happened after the battle at the Axona but before the battle with the Nervii and the siege of Atuatuca. The length of the day is then included as a uniform PDF between 15.1 and 16.5 hours.

Table E.2: Calculation of the marching speed for Caes. *Gal.* 2.12, including the probability density functions of variables used.



[To go back to Table 3 click [here](#).]

116 Holmes 1911, 668-70. Napoleon 1866, II, 105.



**Caes. Gal. 5.9**

In 54 BCE Caesar undertook his second expedition to Britain. Shortly after arriving on the island, Caesar set out on a night march from his camp on the coast towards the Britons.

*de tertia vigilia ad hostis contendit [...] Ipse noctu progressus milia passuum circiter XII hostium copias conspicatus est.*

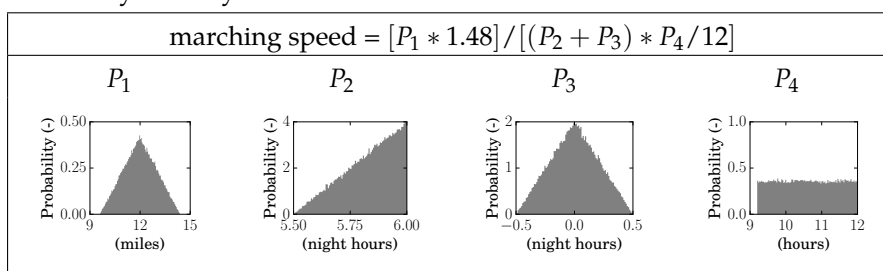
From the third watch [Caesar] hurried towards the enemy [...] [Caesar] himself, after he progressed around 12 miles [that] night, discerned the enemy troops.

(Caes. Gal. 5.9)

The distance of the march is explicitly stated as being *milia passuum circiter XII* (around 12 miles). Due to the qualification with *circiter* (around), a symmetrical triangular PDF covering a 20% variation (between 9.6 and 14.4 miles) is assumed for the distance.

As the expedition to Britain is the first military activity of the year, it is assumed to be just after the spring equinox, i.e. seasonal period P3. For the region where the march took place, the coordinates of Canterbury are assumed (coordinates: 51.279776, 1.078690). At this location and period the night lasts between 9.2 and 12.0 hours, and a uniform PDF between these values is assumed. The time of departure is indicated as *de tertia vigilia* (from the third watch). An asymmetrical triangular PDF from the start of the third watch to half an hour shorter is assumed. Moreover, the duration of the march is deduced from the fact that the march was completed *noctu* ([that] night). The time of arrival is assumed to be at sunrise, leading to a symmetrical triangular PDF covering half a night hour variation around sunrise.

Table E.3: Calculation of the marching speed for Caes. Gal. 5.9, including the probability density functions of variables used.



[To go back to Table 3 click [here](#).]

**Caes. Gal. 5.46**

After Caesar's second expedition to Britain in 54 BCE, several of the Belgic tribes revolted. When news arrived about the siege of Quintus Cicero's winter camp, Caesar summoned some of his legates to gather at Samarobriua (where Caesar himself stayed) in order to march and relieve the besieged. One of these legates was Marcus Crassus, whose march is discussed below.<sup>117</sup>

*Caesar, acceptis litteris hora circiter undecima diei, statim nuntium in Bellovacos ad M. Crassum quaestorem mittit, cuius hiberna aberant ab eo milia passuum XXV; iubet media nocte legionem proficisci celeriterque ad se venire. Exit cum nuntio Crassus [...] Hora circiter tertia ab antecursoribus de Crassi adventu certior factus*

Caesar, after receiving [Cicero's] letter around the eleventh hour of the day, immediately sent a messenger into [the territory of] the Bellovaci to the quaestor M. Crassus, whose winter camp was 25 miles from him; he ordered [Crassus] to lead out [his] legion at midnight and to march quickly to him. Crassus left with the messenger [...] Around the third hour [Caesar] was informed by forerunners about Crassus' arrival (Caes. Gal. 5.46-47)

It is stated that Crassus' winter camp is *milia passuum XXV* (25 miles) from Samarobriua. A symmetrical triangular PDF covering a 10% variation (between 22.5 and 27.5 miles) is assumed for this distance.

Because it is noted that Caesar sails back from Britain around the autumn equinox,<sup>118</sup> the assumed seasonal period is P7. Moreover, Caesar was staying at Samarobriua (Amiens, coordinates: 49.894912, 2.299193).<sup>119</sup> The length of a night at Amiens in P7 varies between 12.0 and 14.7 hours. Regarding the time of departure, it is not explicitly stated that Crassus indeed left at midnight. However, the context, and specifically the statement that Crassus left with the messenger, strongly suggests that he followed his orders promptly. Due to this additional ambiguity in the text, a symmetrical triangular PDF is assumed around midnight with one night hour variation (thus covering 5 to 7 night hours). Next, regarding the time of arrival, Caesar reports that *hora circiter tertia* (around the third hour) he is informed about Crassus' arrival, through his *antecursoribus* (forerunners). This time of arrival is qualified in two ways, firstly, by *circiter* (around) and secondly by the fact that the fore-

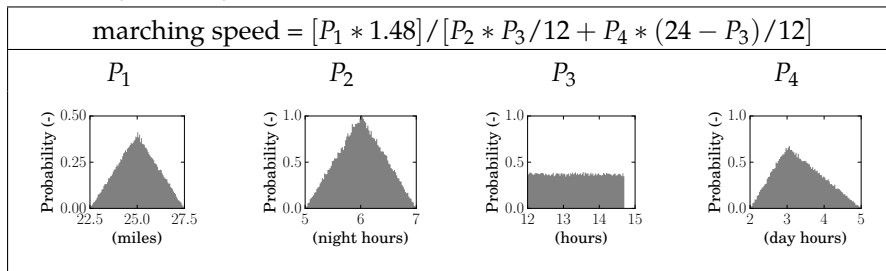
117 It is noted that this march is not led by Caesar himself and could therefore be argued to not directly contribute to Caesar's *celeritas*. However, I assume with Yavetz (1983, 219-220) that military fame, although achieved by a subordinate, reflected significantly on the general-in-command as well.

118 Caes. Gal. 5.23.

119 Caes. Gal. 5.47.

runners are arriving at that time (thus not yet Crassus himself).<sup>120</sup> Therefore, an asymmetrical triangular PDF is assumed around the third hour of the day, with one *hora* variation towards the second hour and two *horae* variation towards the fifth hour.

Table E.4: Calculation of the marching speed for Caes. *Gal.* 5.46, including the probability density functions of variables used.



[To go back to Table 3 click [here](#).]

<sup>120</sup> Kraner et al. (1965, 106) likewise estimate the difference between the forerunners and the main column to be between one and two hours.

**Caes. Gal. 5.47**

During the same situation, once the forerunners have announced Crassus' arrival, Caesar immediately set out to relieve Cicero's camp with the legion that was wintering with him in Samarobriva. The events are therefore at the same location and seasonal period as the previous example.

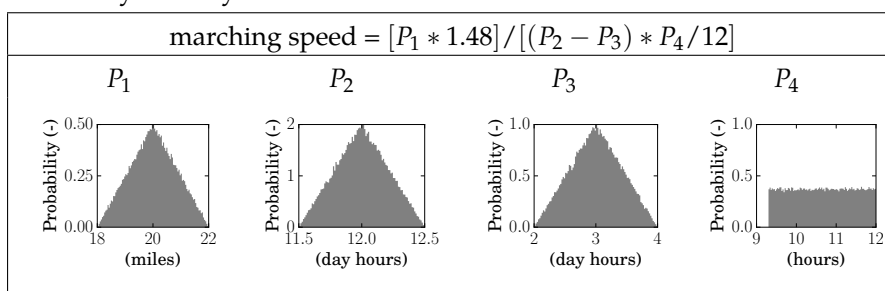
*Hora circiter tertia ab antecursoribus de Crassi adventu certior factus, eo die milia passuum XX procedit. Crassum Samarobrivae praeficit legionemque attribuit*

Around the third hour [Caesar] was informed by forerunners about Crassus' arrival and progressed that day 20 miles. He put Crassus in command of Samarobriva and assigned one legion to him (Caes. Gal. 5.47)

The distance Caesar marched is 20 miles, with a 10% variation in the assumed PDF.

From the text order, Caesar firstly *procedit* (progressed) and then *praeficit* (put in command), it is deduced that Caesar actually left at the third hour (approximately), even before Crassus himself effectively arrived at Samarobriva.<sup>121</sup> Therefore, the time of departure is set on the third hour, with the symmetrical triangular PDF covering one *hora* variation. Next, the time of arrival is indicated by *eo die* (that day). It is assumed that Caesar thus arrived around sundown. The PDF covers then a variation of half an *hora* around sundown (the twelfth hour).

Table E.5: Calculation of the marching speed for Caes. Gal. 5.47, including the probability density functions of variables used.



[To go back to Table 3 click [here](#).]

121 Kraner et al. 1965, 106.

**Caes. Gal. 7.39**

While Caesar is besieging Gergovia in the summer of 52 BCE, he received messages that some factions of the Aedui were revolting and were considering joining Vergincetorix. Caesar decided to immediately lead out four legions and march towards the Aeduan column to prevent them from joining Vergincetorix (who is also camping close to Gergovia). Once arrived, he quelled the uprising quickly (without a fight) and returned the same day to Gergovia. However, half way, he received notice that the Gauls were attacking his camp, so he hurried further to relieve it.

*Ex his Eporedorix cognito Litavicci consilio media fere nocte rem ad Caesarem defert [...] Magna adfectus sollicitudine hoc nuntio Caesar, quod semper Aeduorum civitati praecipue indulserat, nulla interposita dubitatione legiones expeditas quattuor equitatumque omnem ex castris educit [...] Adhortatus milites ne necessario tempore itineris labore permoveantur, cupidissimis omnibus progressus milia passuum XXV, agmen Aeduorum conspicatus [...] tribusque horis noctis exercitui ad quietem datis, castra ad Gergoviam movit. [...] His rebus cognitis, Caesar summo studio militum ante ortum solis in castra pervenit.*

Of these two [Gallic nobles] Eporedorix, when he came to know Litaviccus' plan, reported it to Caesar approximately at midnight [...] Caesar, highly disturbed by this news, because he had always been benevolent towards the Aeduan civitas, without any hesitation led four battle-ready legions and the entire cavalry out of the camp [...] After encouraging the soldiers that they should not worry over the labour of marching in time of need, all were so eager that he progressed 25 miles when he discerned the Aeduan column [...] after giving the army three night hours of rest, [Caesar] moved [back] to Gergovia [...] After becoming aware of these things, Caesar, with the help of the extreme effort of the soldiers, arrived at the camp before sunrise.

(Caes. Gal. 7.39-41)

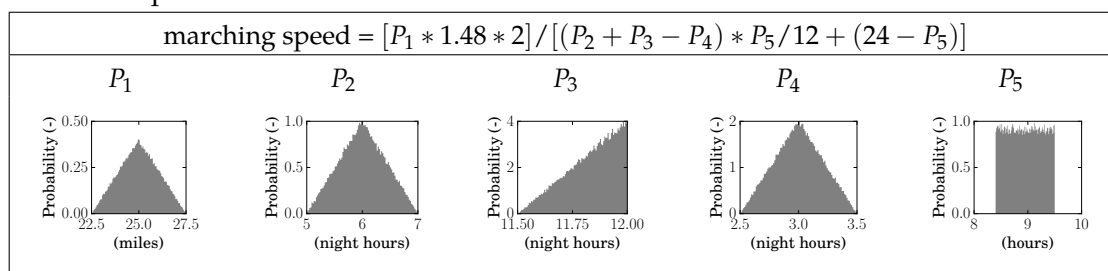
The distance of this march is mentioned to be *milia passuum XXV* (25 miles). A symmetrical triangular PDF covering a 10% variation (between 22.5 and 27.5 miles) is assumed. Since the reported marching duration includes both ways (back and forth), the PDF is multiplied by two.

The seasonal period is summer (period P4 or P5), since Caesar wanted to cross the Allier before the autumn.<sup>122</sup> The location is in the vicinity of Gergovia (coordinates: 45.721281, 3.122446). The length of the night is then between 8.4 and 9.5 hours, with a uniform PDF assumed between these values. Caesar received the news *media fere nocte* (approximately at midnight) and left immediately. Therefore, a symmetrical triangular PDF is assumed for the marching duration in the first night, covering 6 *horae noctis* with a

122 Caes. Gal. 7.35.

variation of one *hora noctis*. The entire day in between the two nights is also included in the marching duration. And Caesar arrived back at Gergovia *ante ortum solis* (before sunrise). Due to the comparative qualification, an asymmetric triangular PDF is assumed for the second night minus half a *hora noctis*. Finally, the soldiers are allowed to rest *tribus horis noctis* (for three hours of the night).<sup>123</sup> For the resting period a symmetrical triangular PDF is assumed, covering  $3 \pm 1$  *horae noctis*.

Table E.6: Probability density functions of variables used to calculate marching speed in Caes. *Gal.* 7.39.



[To go back to Table 3 click [here](#).]

123 The actual scheduling of this march is problematic; the entire timespan of the way there and back is about 30 hours and the middle of that time period is in the afternoon. Thus, assuming the way back and forth were marched with similar speeds, the resting period (which happened after the confrontation with the Aedui) would be during the day, but it happened at night (explicitly stated). Probably Caesar arrived during the day, while the confrontation filled the remaining time of the day, then Caesar gave the soldiers some time to rest (from sunset?). This is however not further specified and the entire time period (except the mentioned resting period) is taken as marching time. It is noted that the resulting marching speed PDF will thus be biased towards slower speeds.

**Sal. Iug. 68**

During the winter of 109/108 BCE the people of Vaga revolted to Roman occupation. The garrison, which was put there by Metellus the previous summer after conquering the city, and all other Roman citizens in the city, were massacred. Metellus marched quickly from his winter quarters to Vaga with the one legion which was wintering with him (the other legion was probably wintering in Utica with Marius) and some Numidian cavalry, to avenge the massacre.

*Legionem, cum qua hiemabat, et quam plurimos potest Numidas equites pariter cum occasu solis expeditos educit et postera die circiter hora tertia pervenit in quendam planitiem locis paulo superioribus circumventam. Ibi milites, fessos itineris magnitudine et iam abnuentis omnia, docet oppidum Vagam non amplius mille passuum abesse*

[Metellus] led out the legion with which he was wintering and as many Numidian horsemen as possible at the same time at sunset and arrived the next day around the third hour on a plain surrounded by slightly higher ground. There he explained the soldiers, who were tired of the long march and already starting to refuse all [orders], that the oppidum Vaga was not more than a thousand paces away  
(Sal. Iug. 68)

Metellus is reported to set out from his winter quarters, which can be assumed to be in Tisidium for the following reasons. After going into winter quarters,<sup>124</sup> Iugurtha was convinced by his general Bomilcar to surrender to the Romans. He handed over money, arms and deserters, after which he was ordered by Metellus to present himself at Tisidium to receive his orders.<sup>125</sup> It is assumed that Metellus ordered Iugurtha to present himself at his winter quarters.<sup>126</sup> The point of arrival, for which we know the time of arrival, is one mile from Vaga. Both Tisidium and Vaga are in the BA. Using the GIS maps, the itinerary between these two locations is reconstructed; see Map E.2. The distance is estimated to be 52 km, with the standard asymmetrical (+20% and –10%) variations.

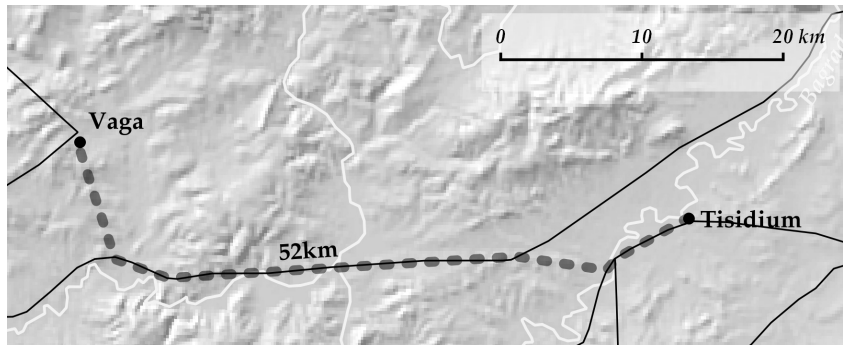
Regarding the marching duration, Metellus set out *occasu solis* (at sunset) arriving *postera die circiter hora tertia* (the next day around the third hour). Thus, for the night part of the march, a PDF for the entire night, with half an night hour variation, is assumed. For the day part, three *horae* are assumed, with a variation of one *hora*, due to the qualification. The seasonal period is winter time; Metellus ended the siege of Zama (just before he went into winter camps) because the summer had already finished.<sup>127</sup> The incident at

124 Sal. Iug. 61.

125 Sal. Iug. 62.

126 Evidently, Iugurtha decided not to surrender himself and renewed the war.

127 Sal. Iug. 61.



Map E.2: Numidia with Metellus' march from Tisidium to Vaga (Sal. *Iug.* 68).

Vaga happens only after Metellus is settled in winter camp, so the seasonal period is assumed to be P8 or P1 (these periods are equal). The march is in the neighbourhood of Vaga (coordinates: 36.724395, 9.182222). In these regions in the seasonal period P8, the length of the night is between 13.6 and 14.5 hours.

Table E.7: Calculation of the marching speed for Sal. *Iug.* 68, including the probability density functions of variables used.

marching speed = $\frac{[(52 * P_1) - P_2 * 1.48]}{[(P_3 * P_4/12) + (P_5 * (24 - P_4))]}$				
$P_1$	$P_2$	$P_3$	$P_4$	$P_5$

[To go back to Table 3 click [here](#).]



## F

MULTI-DAY MARCHES

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In this Appendix discussions are presented for all the marches as presented in Table 4. These include all the multi-day marches from all three investigated authors; Caesar, Sallustius and Cicero. Each discussion addresses the method of determining the marching distance and duration of the respective march. Additionally, the assumed PDFs and the calculation procedure of the marching speed are also included.

**Caes. Gal. 1.10**

In 58 BCE Caesar entered Gaul with five legions in order to stop the Helvetii, who were migrating westwards. In order to lead the legions into Gaul from the place where he mustered them in northern Italy, he had to cross the Alps.

*ab Ocelo, quod est citerioris provinciae extremum, in fines Vocontiorum ulterioris provinciae die septimo pervenit*

From Ocelum, which is the last [oppidum] in the province [Gallia] Citerior, [Caesar] arrived in the territory of the Vocontii in the province [Gallia] Ulterior on the seventh day

(Caes. Gal. 1.21-22)

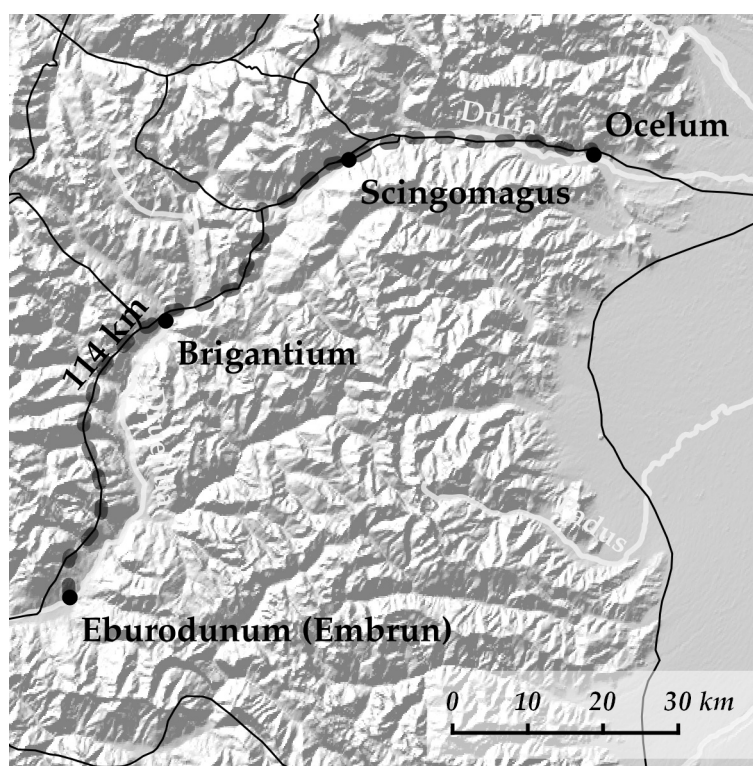
The march is completed on the seventh day, so a symmetrical triangular PDF between 6.5 and 7 is assumed for the marching duration. Regarding the marching distance, Napoleon (1866, II, 56, note 5) identifies Ocelum with modern Usseaux along the Chisone river. However, both Holmes (1911, 432) and the BA (map 39) position Ocelum along the river Duria at modern Drubiaglio. The latter location seems to be the more probable identification, based on vases inscribed with itineraries which position Ocelum at about 20 Roman miles from Turin (thus corroborating the Drubiaglio location).<sup>128</sup> The route over the Alps from this point follows the Duria until Brigantio. Napoleon (1866, II, 56, note 3 and 1866, Atlas, map 4) reconstructs Caesar's itinerary thence straight to Cularo (modern Grenoble), while Holmes (1911, 48 and 615-6) conjectures a route via modern Embrun, Gap and then towards Grenoble. In order to decide on which route Caesar took, the boundaries of the *fines Vocontiorum* (the territory of the Vocontii) has to be determined. Strabo (*Geo.* 4.1.3) states that Eburodunum (Embrun) is the eastern end of the territory of the Vocontii, while Ptolemy (*Geogr.* 3.1) assigned this city to the Caturiges.<sup>129</sup> Caesar subsequently elaborates on the continuation of his itinerary; after arriving at the Vocontii, he continues *inde in Allobrogum fines, ab Allobrogibus in Segusiavos exercitum ducit* (from there he led his army into the territories of the Allobroges, and from the Allobroges to the Segusiavi, Caes. Gal. 1.10). If Caesar would have moved from Brigantio directly to Grenoble,<sup>130</sup> he would not have passed through the territory of the Vocontii. Therefore, I agree with Kraner et al. (1968, 104) and Holmes (1911, 48 and 615-6) that Caesar would have passed via Eburodunum (Embrun), i.e. via the territory of the Vocontii, before turning northwards towards the Helvetii.

128 For a complete overview of the evidence see Holmes 1911, 430-2.

129 Both interpretations serve our argument equally, since the eastern-most border of the territory of the Vocontii implies how far west Caesar travelled before turning north towards the Allobroges. See also Holmes 1911, 501-2.

130 Cularo (Grenoble) is in the territory of the Allobroges; see e.g. the letter of Plancus to Cicero written *Cularone in fines Allobrogum* (in Cularo within the territory of the Allobroges, Cic. *Fam.* 10.23) and dated in 43 BCE.

In Map F.1 the area is depicted, with all the relevant locations and indicating the assumed march (along the established Roman road through the pass) with an estimated distance of 114 km. Note that Strabo (*Geo.* 4.1.3) mentions that Ocelum was 99 Roman miles (or about 146 km) from Eburodunum.<sup>131</sup> The difference is probably due to the road winding on steep passages. Indeed the route (as it is a mountain pass) does include several steep parts; see the elevation profile in Figure F.1. Moreover, it is known that the Gallic roads used winding to mitigate steep ascents.<sup>132</sup> Thus, Caesar's itinerary was somewhere between 114 and 146 km; I assume a uniform PDF distribution between these two extremes, before impounding the standard  $-10\%$  and  $+20\%$  variation for GIS maps.



Map F.1: Gaul with Caesar's march from Ocelum to the territory of the Vocontii (Caes. *Gal.* 1.10).

[To go back to Table 4 click [here](#).]

<sup>131</sup> Which roughly coincides with the distances mentioned in the *Itinerarium Romanorum* and *Itineraria Hierosolymitanum*; 93 to 104 miles (Wesseling, 1735, 341-342, 356-357, 555-556).

<sup>132</sup> Caes. *Gal.* 7.46.

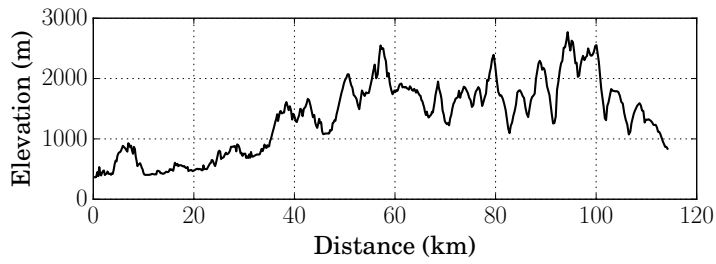
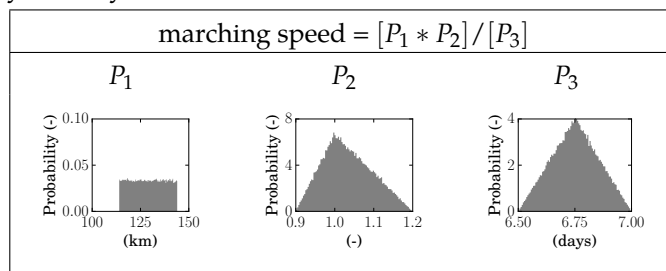


Figure F.1: Elevation profile of Caesar's march from Ocelum to the territory of the Vocontii.

Table F.1: Calculation of the marching speed for Caes. *Gal.* 1.10, including the probability density functions of variables used.



**Caes. Gal. 1.41**

Towards the end of the summer of 58 BCE Caesar marched from Vesontio towards the river Rhenus (Rhine) to confront Ariovistus and his German troops. Caesar followed an indirect route and, after an uninterrupted march, set up camp on the seventh day.

*itinere exquisito per Diviciacum, quod ex aliis ei maximam fidem habebat, ut milium amplius quinquaginta circuitu locis apertis exercitum duceret, de quarta vigilia, ut dixerat, profectus est. Septimo die, cum iter non intermitteret, ab exploratoribus certior factus est Ariovisti copias a nostris milia passuum quattuor et XX abesse.*

using a route chosen by Diviciacus, because [Caesar] had the most trust in him of the others [Gauls], in order that he led the army through open terrain by a detour of more than 50 miles, he set out from the fourth watch, as was said. On the seventh day, without interrupting the march, he was informed by [his] scouts that Ariovistus' troops were at 24 miles from our [troops].

(Caes. Gal. 1.41)

Caesar set up camp and started negotiating with Ariovistus, however to no avail. The Germans moved their camp twice more (they ended up only two miles from the Roman camp) and finally Caesar attacked and defeated them in front of their camp.

*omnes hostes terga verterunt neque prius fugere destiterunt quam ad flumen Rhenum milia passuum ex eo loco circiter quinque pervenerunt.*

all enemies routed and did not stop fleeing before they reached the river Rhenus at around 5 miles from that place.

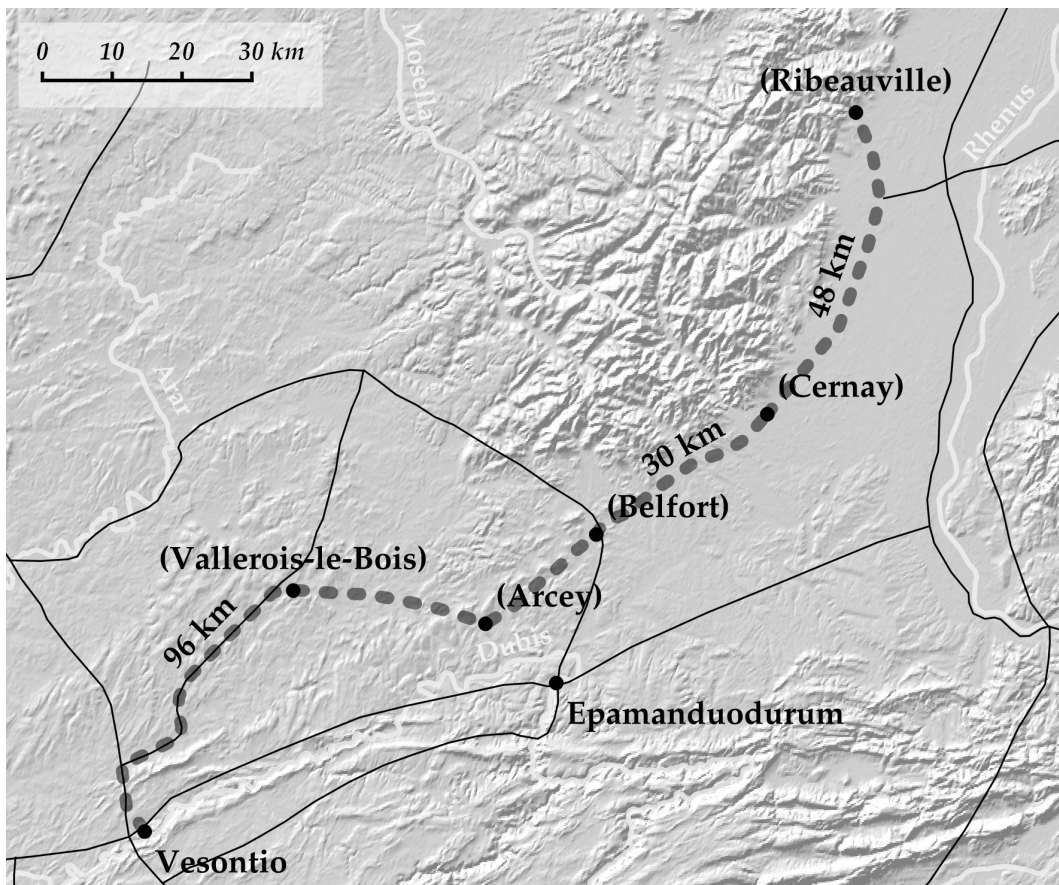
(Caes. Gal. 1.53)

The march is completed on the seventh day, so a symmetrical triangular PDF between 6.5 and 7 is assumed for the marching duration. The point of departure is Vesontio, which is established as modern Besançon. The identification of the point of arrival of this march is however more complicated. First, the interpretation of the noun *circuitus* needs to be assessed in more detail. The OLD gives its meaning as 'an indirect route to a place, a roundabout way, a detour'.<sup>133</sup> Thus, there are various interpretations possible for this passage. In the first interpretation it is assumed that *circuitus* refers to the entire march, with a total length of 50 miles. This interpretation is however highly unlikely, based on the fact that a straight route from Vesontio to the Rhenus is already in the order of magnitude of 80 miles.<sup>134</sup> Secondly, it can be construed that Caesar followed a straightforward route, which additionally included a detour of 50 miles. Napoleon (1866, II, 84, note 1) discards

133 OLD 353, meaning 8 of *circumitus*.

134 See also Holmes 1911, 638.

this interpretation, arguing that if Caesar wanted to indicate an additional detour of 50 miles, he would have used a more explicit expression. Napoleon refers to a passage from the *De Bello Civile*, where Caesar writes *miliū sex ad iter addito circuitu* (while a detour of six miles was added to the route, *Caes. Civ.* 1.64).<sup>135</sup> The third interpretation is that Caesar partly followed an indirect route (that indirect part being 50 miles in length) and the remaining part via a direct route towards the Rhenus. This is what Napoleon (1866, II, 84-5) assumes, reconstructing this indirect part from Vesontio over Valleriois-de-Bois to Arcey, and thence following a direct route towards the Rhenus.<sup>136</sup> It is noted that the distance of the indirect part of the route (Vesontio to Arcey) is about 75 km, which roughly coincides with 50 miles. For this reason, the third interpretation seems most probable and is used in this study.<sup>137</sup>



Map F.2: Gaul with Caesar's march from Vesontio to the Rhenus (*Caes. Gal.* 1.41).

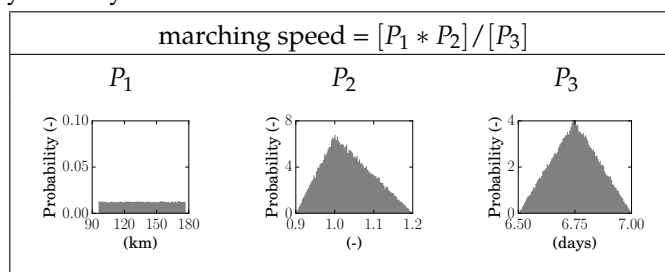
135 Holmes (1911, 638) follows Napoleon on this argument.

136 Napoleon 1866, Atlas, map 4.

137 Holmes 1911, 638-639

Finally, the point of arrival of the march, i.e. the location of the Roman camp, needs to be determined.<sup>138</sup> We can locate the camp by the fact that it was (1) close (two miles) from the final German camp,<sup>139</sup> and (2) that the Germans fled for 5 miles to reach the Rhenu after they were routed. While the OCT has 5 miles, Plutarchus (*Caes.* 19.11) and Orosius (6.7.10) mention 50 miles. Napoleon (1866, II, 93, note 1) and many textual editors prefer an interpretation of 50 miles for the flight of the Germans after the battle, based on these other testimonies, and amend Caesar's text accordingly. Remarkably, in Napoleons subsequent reconstruction the German camp is only about 16 miles from the Rhenu. In order to defend this discrepancy, Napoleon (1866, II, 93, note 1) argues that the 50 miles indicates the distance of the flight, which is not necessarily the shortest route. Three of the locations that have been identified for the battlefield (and thus within 2 miles from the camp of Caesar) are relevant for this study, which include (from south to north) Belfort, Cernay and Ribeauville; see also Map F.2.<sup>140</sup> The distances from Vesontio (including the *circuitus* as reconstructed by Napoleon) to these locations are 96, 126, and 177 km, respectively. A uniform PDF between 96 and 177 km is assumed for the marching distance, excluding the standard variations for GIS maps.<sup>141</sup>

Table F.2: Calculation of the marching speed for *Caes. Gal.* 1.41, including the probability density functions of variables used.



[To go back to Table 4 click [here](#).]

138 Assuming that Caesar did not move his camp any further for which there are no indications in the *De Bello Gallico*.

139 *Caes. Gal.* 1.48.

140 Additionally, Ohnenheim and a non-specified location between Mulhouse and Basel have also been proposed. However, to include these places will not change the results, because the distances to these places fall within the already assumed range.

141 Note that since the variation in this distance is already so large, the inclusion of the 2 miles distance between the Roman camp and the German is negligible.

**Caes. Gal. 7.11**

Early 52 BCE Caesar moved to succour the Boii, an allied tribe who lived in and around Gorgobina and who were besieged by Vercingetorix. During this march he passed by two oppida, Vellaunodunum and Cenabum.

*Duabus Agedinci legionibus atque impedimentis totius exercitus relictis, ad Boios proficiscitur. Altero die cum ad oppidum Senonum Vellaunodunum venisset [...] Ipse, ut quam primum iter faceret, Cenabum Carnutum proficiscitur [...] Huc biduo pervenit.*

After leaving two legions and the baggage of the entire army in Agedincum, [Caesar] left towards the Boii. When he arrived the following day at the oppidum of the Senones Vellaunodunum [...] He himself [Caesar], in order finish his march as fast [as possible], left for Cenabum of the Carnutes; [...] Here [Cenabum] he arrived in two days.

(Caes. Gal. 7.10-11)

There are three locations that have to be identified in order to be able to determine the marching distance, i.e. Agedincum, Vellaunodunum and Cenabum. Agedincum is generally identified with Sens.<sup>142</sup> This identification is mainly based on Sens being the chief town of the Senones in the early days of the catholic church. Additionally, an inscription with AGIED[incensium] was found in Sens in the nineteenth century. Regarding Vellaunodunum, there is no single identification agreed upon.<sup>143</sup> Most scholars argue for a location based on the presently discussed passage from the *De Bello Gallico*, viz. choosing a site that (assuming a certain marching speed) would satisfy the travel times mentioned by Caesar. After careful consideration, Holmes (1911, 498) concludes that two possible sites remain; Montargis and Sceaux. At Montargis Roman antiquities were found,<sup>144</sup> while in the environs of Sceaux Celtic remains and Roman coins have been uncovered.<sup>145</sup> It is concluded that both sites remain possibilities, and both of them will be included in this study. Finally, regarding the location of Cenabum, a vexed discussion has been conducted between supporters for the locations of Gien and Orleans, respectively.<sup>146</sup> While Napoleon seems one of the last defenders of Gien, Cenabum is presently identified with Orleans.<sup>147</sup> In conclusion, there are two possible itineraries for Caesar's march from Agedincum to Cenabum, which are based on the two different identifications for Vellaunodunum; see also Map F.3.<sup>148</sup> Although both routes cover similar total distances, it is ob-

142 Holmes 1911, 353-4. Also in the BA.

143 Not included in the BA.

144 Holmes 1911, 497.

145 Holmes 1911, 496.

146 See the full summary and analysis of this dichotomy in Holmes 1911, 405-15.

147 See Holmes' (1911, 414-5) convincing conclusion and also the BA.

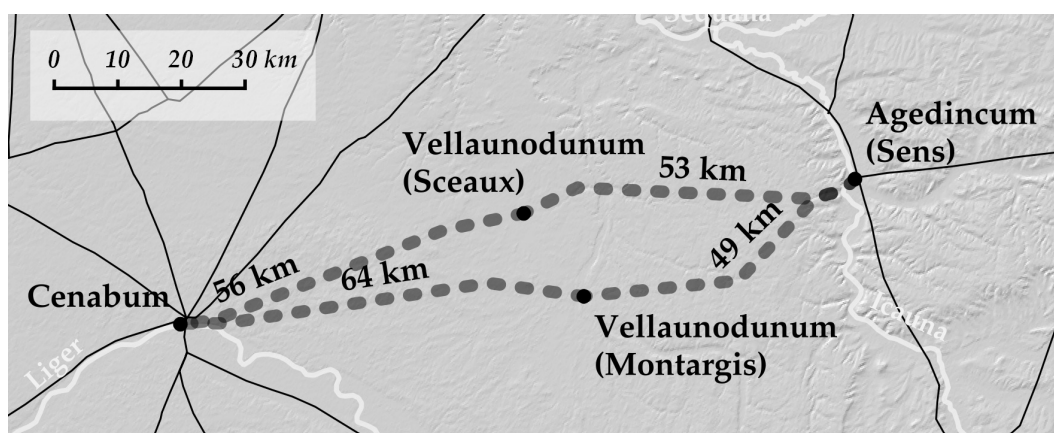
148 The other towns of these routes are also mentioned by Holmes (1911, 494-5).



served that the two legs of both routes differ slightly. The marching speeds are calculated for both legs separately.

The first part of the march, that from Agedincum to Vellaunodunum, is completed on the day following the day of departure (*altero die*).<sup>149</sup> Thus, a symmetrical triangular PDF is assumed between 1.5 and 2 days. The marching distance is taken as a uniform PDF between 49 and 54 km for the two routes, excluding the standard GIS maps variation.

The second part is also completed in two days (*biduo*), and a similar symmetrical triangular PDF between 1.5 and 2 days is assumed.<sup>150</sup> Again, the marching distance of the second leg is taken as a uniform PDF between 56 and 64 km for the two routes, excluding the standard GIS maps variation.



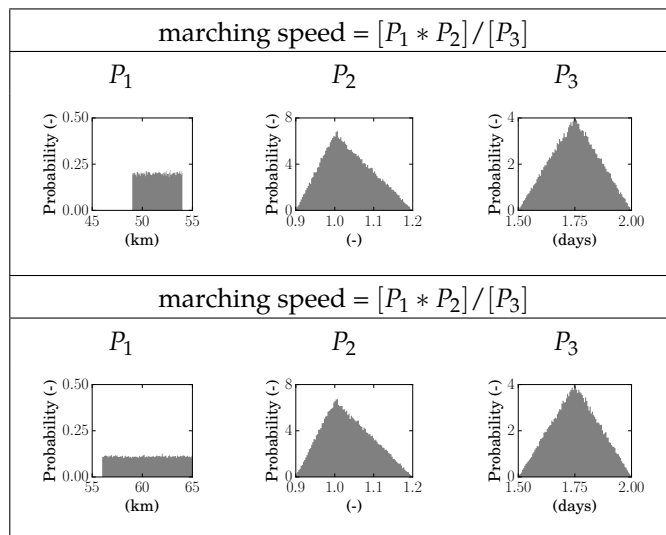
Map F.3: Gaul with Caesar's march from Agedincum, over Vellaunodunum, to Cenabum (Caes. *Gal.* 7.11).

[To go back to Table 4 click [here](#).]

149 Holmes (1911, 738-40) proves this interpretation over Napoleon's, who assumes that *altero die* indicates the second day after the day of departure.

150 One could argue that there is a delicate difference in meaning between 'he arrived on the second day' and 'the march took two days'. In the latter case, it is more explicit that the actual march took two (full?) days, while in the former case the time of arrival was before the end of the second day. These nuances are however not included in the calculations.

Table F.3: Calculation of the marching speed for Caes. *Gal.* 7.11, including the probability density functions of variables used. Upper columns represent the former leg of the march while the lower columns represent the latter leg of the march.



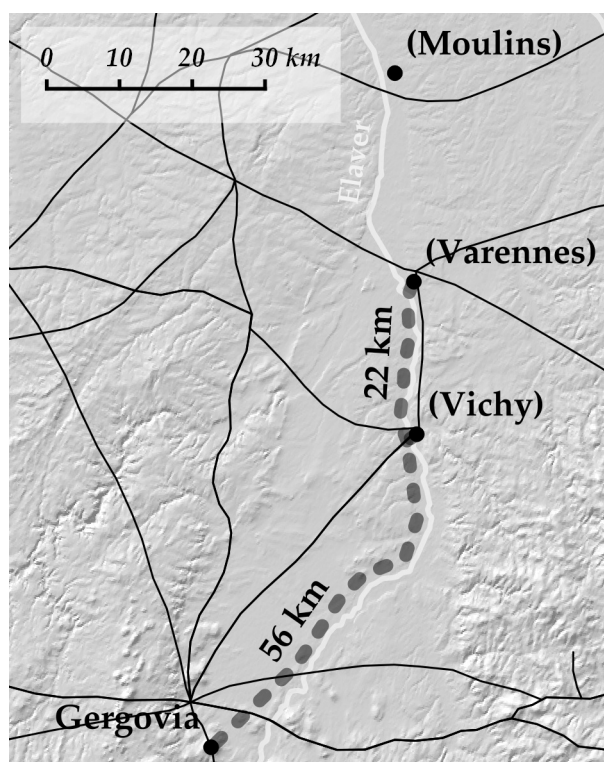
**Caes. Gal. 7.36**

After Caesar conquered a number of Gallic oppida in early 52 BCE, he followed the main Gallic column towards Gergovia. Marching southwardly along the river Elaver (Allier), Caesar is struggling to ferry the river, since Vercingetorix, who is marching at the other side of the same river, is destroying all the bridges over it. Then, by hiding two legions close to one of these destroyed bridges, he managed to capture and restore this bridge and thus transfer the legions over the Elaver.

*Celeriter effecto opere legionibusque traductis et loco castris idoneo delecto, reliquas copias revocavit. [...] Caesar ex eo loco quintis castris Gergoviam pervenit*

This work [the repairing of the bridge] quickly finished, the [two] legions transferred and a proper location for the camp selected, [Caesar] called back the other troops. [...] Caesar from that point reached Gergovia in five camps [i.e. days]

(Caes. Gal. 7.35-36)

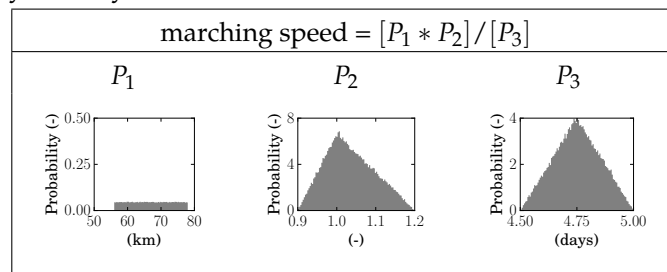


Map F.4: Gaul with Caesar's march from the Elaver to Gergovia (Caes. Gal. 7.36).

There are three Roman roads that cross the Elaver (Allier) in this region, which are at Moulins, Varennes and Vichy, and at these locations one might expect a bridge to have existed. Napoleon (1866, II, 267, note 3) assumes that

Caesar crossed at Varennes, a reconstruction that also Holmes (1911, 754-5) finds most likely.<sup>151</sup> The alternative options are (downstream) Moulins and (upstream) Vichy. The former of these seems least likely since the landscape of the eastern riverbeds of the Allier between Moulins and Varrennes are rough; see Map F.4. It is therefore unlikely that Caesar would have crossed the river before Varennes and it can be assumed that Caesar crossed the Allier either at Varrennes or Vichy. Gergovia has been identified by means of archaeological remains and is also located in the BA. Thus, a uniform PDF between 56 and 78 km (excluding the standard GIS variation) is assumed for the marching distance. The marching duration is assumed as a symmetrical triangular PDF between 4.5 and 5 days.

Table F.4: Calculation of the marching speed for Caes. *Gal.* 7.36, including the probability density functions of variables used.



[To go back to Table 4 click [here](#).]

151 In the same discussion however, Holmes admits that the information supplied in the *De Bello Gallico* is simply insufficient for a definite identification.

**Sal. Iug. 90**

In the summer of 107 BCE Marius is ravaging Numidia town by town trying to get Iugurtha to come out and fight him.<sup>152</sup> But when Iugurtha stayed away, Marius decided to attack the town of Capsa, which is in the middle of the desert.

*A. Manlium legatum cum cohortibus expeditis ad oppidum Laris, ubi stipendium et commeatum locaverat, ire iubet dicitque se praedabundum post paucos dies eodem venturum. Sic incepto suo occultato perguit ad flumen Tanain. [...] Denique sexto die, cum ad flumen ventum est, maxuma vis utrius effecta. Ibi castris levi munimento positus, milites cibum capere atque uti simul cum occasu solis egrederentur paratos esse iubet; omnibus sarcinis abiectis aqua modo seque et iumenta onerare. Dein, postquam tempus visum, castris egreditur noctemque totam itinere facto consedit. Idem proxuma facit, dein tertia multo ante lucis adventum pervenit in locum tumulosum ab Capsa non amplius duum milium intervallo*

[Marius] ordered the legate A. Manlius to go with several battle-ready cohorts to the oppidum of Lares, where he had located the money and provisions, and he said he would come to the same place after a few days of plundering. Thus keeping his plan hidden, he set out towards the river Tanaïs. [...] Then, on the sixth day, when they arrived at the river, a large number of sacks were made. After setting up a camp there with few fortifications, [Marius] ordered the soldiers to take some food, to be ready to leave at sunset, and abandoning their packs to load themselves and the animals with only water. Then, when the time seemed right, he left the camp and [only] after marching the entire night he set up camp again. The next night he did the same, then during the third night, long before sunset, he arrived in a hilly place, not more than 2 miles from Capsa  
(Sal. Iug. 90-91)

Although this march is divided in two distinct legs, with the river Tanaïs as the intermediate point, the march is nevertheless treated as a single march. The reason for this is the problematic identification of the location of the intermediate point. Modern scholars seem to agree on an identification of the Tanaïs with the Oued el Derb, which runs just north of Cilium (see Map F.5) and is a perennial river.<sup>153</sup> However, even assuming this identification, there are still two possible itineraries to be constructed; the first from the Tanaïs directly towards Thelepte or alternatively proceeding along the Tanaïs until Cilium, and only from there turning south towards Thelepte and Capsa. Thus, while both of these itineraries are still considered, the march is treated as a single march. The point of departure for this march is assumed to be

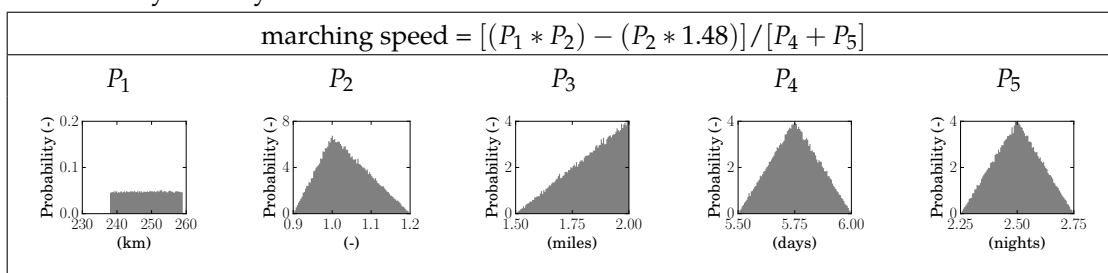
152 Sal. Iug. 87-88.

153 Gsell 1928, VII, 233. Paul 1984, 225.

close to Lares, although the text is not conclusive in this regard. Gsell (VII, 232-3) hypothesises that Marius set out from Madauros, which is between Cirta and Sicca.<sup>154</sup> Following this conjecture, it is assumed that Marius went from Madauros along the road indicated by the BA towards the river Tanais (Oued el Derb). The point of arrival is in a hilly country not more than 2 miles from Capsa. Looking at the map, it is assumed that Marius marched from Thelepte more or less in a straight line southwards to Capsa, arriving in the hills north-west of Capsa.<sup>155</sup> The distance from Madauros to Capsa via the two different itineraries are 238 and 259 km, the latter including the detour along the river Tanais and over Cilium. A uniform PDF is assumed between these values, excluding the standard  $-10%$  and  $+20%$  variations for GIS maps. Moreover, the distance between Marius' point of arrival and Capsa (not more than 2 miles) is included as a separate increasing triangular PDF between 1.5 and 2 miles. The half mile variation in this PDF is reflecting the variation due to rounding.

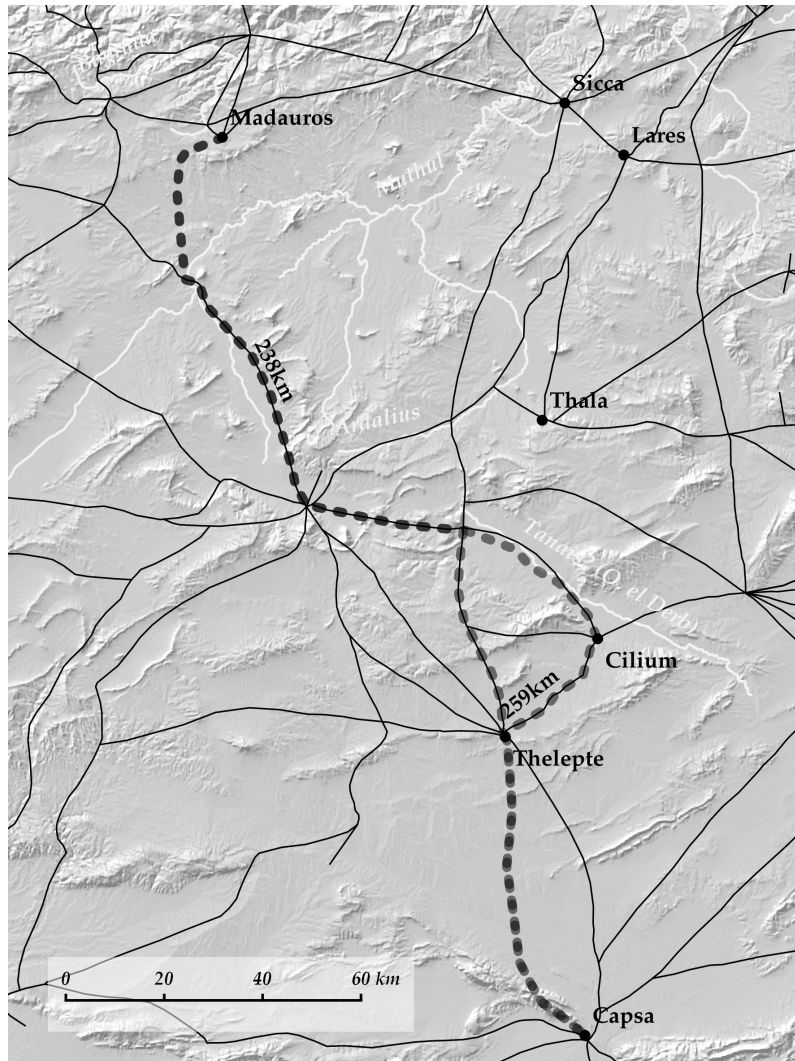
Now for the marching duration, the first leg is completed by the sixth day, thus, a symmetrical triangular PDF between 5.5 and 6 days is assumed. Then, Marius marches three more days (that is, he is marching during the night and resting during the day, probably because of the heat in the desert) to complete the second leg of the march, arriving long before sunrise during the third night. A triangular PDF between 2.25 and 2.75 days is therefore assumed. For the total marching duration these two PDFs are summed.

Table F.5: Calculation of the marching speed for Sal. *Iug.* 90, including the probability density functions of variables used.



[To go back to Table 4 click [here](#).]

154 Paul (1984, 224) notes that this hypothesis has much to commend for it, but argues, based on a too long total marching distance, that Marius might have started a bit south of Madauros.  
 155 As Paul (1984, 226) also assumes.



Map F.5: Numidia with Marius' march from Madauros to Capsa (Sal. *Iug.* 90).

**Cic. Fam. 15.1**

In the summer of 51 BCE, before arriving in Cilicia proper, Cicero joined his provincial army at Iconium. The first part of his further march is towards Cybistra. The point of departure is the military camp at Iconium, which was not too far from Iconium itself.<sup>156</sup> The point of arrival is indicated in one of Cicero's letters to the Senate.

*a. d. xiii Kal. Oct., cum exercitum in Ciliciam ducerem, in finibus Lycaoniae et Cappadociae mihi litterae redditae sunt a Tarcondimoto*

On the 18th of September [51 BCE], while I was leading [my] army into Cilicia, on the border of Lycaonia and Cappadocia a letter was brought to me from Tarcondimotus

(Cic. Fam. 15.1)

This regional border is assumed to be near lake Akgöl in modern Turkey.<sup>157</sup> Moreover, it is consented that Cicero's itinerary from Iconium to Cybistra led over Laranda and Derbe.<sup>158</sup> The length of this route is 186 km as reconstructed using the GIS map (see Map F.6). Furthermore, Xenophon (*Anab.* 1.2.19-23) reports that the distance between Iconium and Tyana<sup>159</sup> measures 55 parasangs, which coincides with 1650 stadia, 165 Roman miles or 244 km.<sup>160</sup> However, Tyana is further down the road from Cybistra. Strabo (*Geo.* 12.9) reports the distance between Tyana and Cybistra to be 300 stadia or 54 km.<sup>161</sup> This would lead to a total distance between Iconium and Cybistra of 190 km, which coincides very well with the figure estimated using the GIS maps, taking into account that Cicero did not reach Cybistra proper. A distance of 186 km is thus assumed and multiplied with the standard variation PDF for distances estimated with GIS maps.

For the day of departure there are two different dates mentioned by Cicero. First he wrote *castra movi ab Iconio pridie Kalendas Septembres* (I moved camp from Iconium on the 29th of August, Cic. Fam. 3.6).<sup>162</sup> In another letter he wrote *cum ad me legati missi ab Antiocho Commageno venissent in castra ad Iconium a. d. III Kal. Sept.* (when messengers sent by Antiochus Commagenus came to me at the camp near Iconium on the 3rd of September, Cic. Fam. 15.3).

156 Hunter 1913, 86.

157 Hunter 1913, 89, note 3.

158 Hunter 1913, 87-88. Treggiari 1996, 8-9.

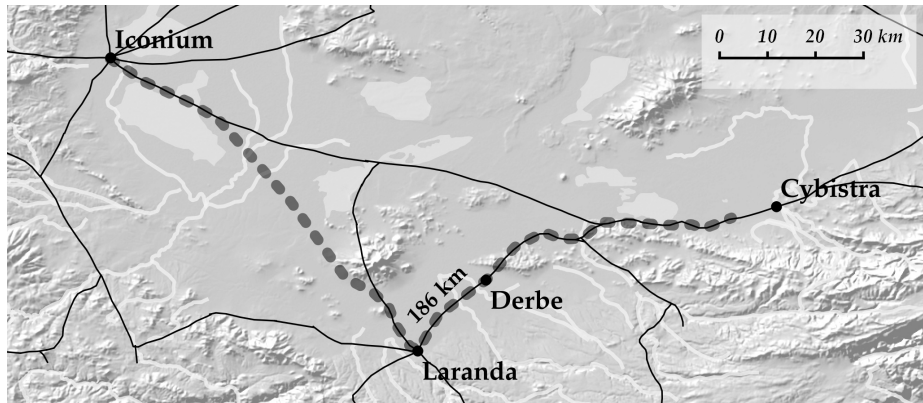
159 Xenophon calls it Dana, but the BA assumes this is the same place as Tyana.

160 Stolle (1912, 45) reports two different interpretations of the stadion as reported by Xenophon; either 8 or 10 stadia to the Roman mile. I assume the latter, since this interpretation is supported by the exact agreement between the value reported by Xenophon (*Anab.* 1.2.23) and the value reported in the *Itinerarium Hierosolymitanum* (Wesseling 1735, 577-579) for the distance from Tyana to Tarsus.

161 Renger 2006. I assume here an average value of 180 m per stadion as reported by Strabo.

162 Note that before the Julian reforms of the calendar the month August had only 29 days. Hunter 1913, 80, note 1.



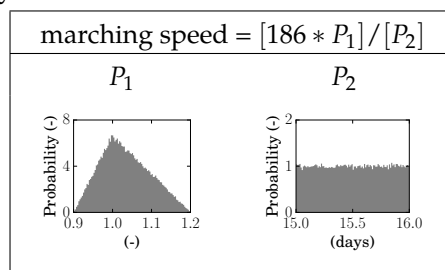


Map F.6: Cilicia with Cicero's march from Iconium to Cybistra (Cic. *Fam.* 15.1).

These two dates obviously seem to contradict each other. Hunter (1913, 81) conjectures that Cicero actually left on 29th of August, but then heard that Appius (the previous governor of Cilicia, whom Cicero was obliged to meet to officially receive the governorship) might be at Iconium. So he turned back to Iconium and then only on the 3rd of September set out again.<sup>163</sup> Assuming this conjecture (as Treggiari does as well) the date of departure is taken to be the 3rd of September 51 BCE.

The above quote from Cic. *Fam.* 15.1 is also informative on the date of arrival; on the 18th of September Cicero was at the border between Lycaonia and Cappadocia.<sup>164</sup> However, we do not know whether he received that letter in the morning (before starting the day's march) or in the evening (after encampment); it could be any time of the day or night. Therefore, a uniform PDF is assumed between 15 and 16 days (depending on including or excluding the 18th of September).

Table F.6: Calculation of the marching speed for Cic. *Fam.* 15.1, including the probability density functions of variables used.



[To go back to Table 4 click [here](#).]

<sup>163</sup> It remains unknown if Cicero actually managed to meet Appius.

<sup>164</sup> Stolle 1912, 45.

**Cic. Att. 5.20**

Cicero followed from Cybistra his march to Tarsus over the Taurus mountain pass.

*cum dies quinque ad Cybistra Cappadociae castra habuissem, certior sum factus Parthos ab illo aditu Cappadociae longe abesse, Ciliciae magis imminere; itaque confestim iter in Ciliciam feci per Tauri pylas. Tarsum veni a. d. iii Non. Oct.*

After I had been encamped for five days at Cybistra in Cappadocia, I was informed that the Parthians were far away from that entrance to Cappadocia, but that they rather threatened [the entry] of Cilicia. Therefore I immediately marched into Cilicia via the Taurus pass. I arrived in Tarsus on the 5th of October [51 BCE].

(Cic. Att. 5.20)

Both the point of departure and the point of arrival are very clear, Cybistra and Tarsus, respectively. There is only one pass over the Taurus mountains to connect these places, which on the GIS map accounts for 144 km. Moreover, Xenophon (*Anab.* 1.2.23) reports the distance between Tyana to Tarsus as 25 parasangs, which coincides with 750 stadia, 75 miles or 111 km.<sup>165</sup> Adding the distance between Cybistra and Tyana of 54 km,<sup>166</sup> the total distance from Cybistra to Tarsus would be 165 km. This distance is higher than the estimated 144 km from the GIS map, which could be due to winding of the actual road to mitigate steep slopes; see the elevation profile in Figure F.2. A uniform PDF is assumed between 144 and 165 km, which is subsequently subjected to the standard variation PDF for GIS maps.

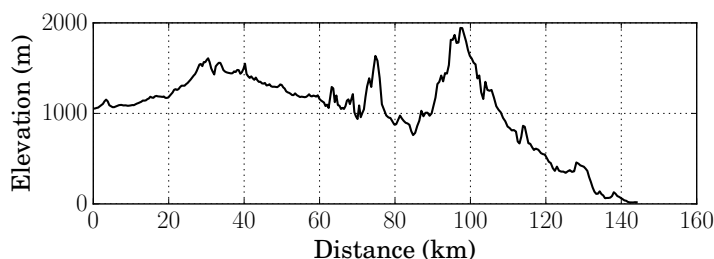


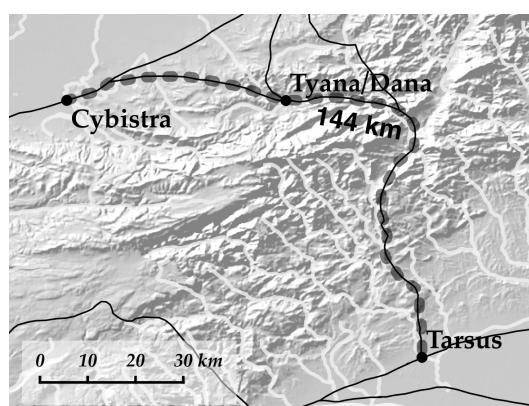
Figure F.2: Elevation profile of Cicero's march from Cybistra to Tarsus.

The date of departure is less clear. In the previous discussion it is mentioned that Cicero was on the border of Lycaonia and Cappadocia (which is very close to Cybistra) on the 18th of September. Then we also know that Cicero was encamped at Cybistra for five days. In Roman reckoning these

<sup>165</sup> See also Wesseling 1735, 577-579.

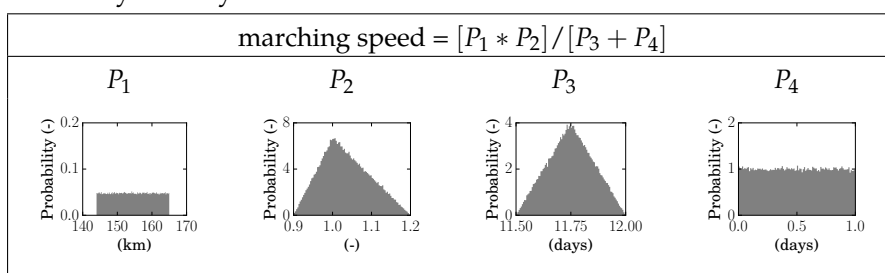
<sup>166</sup> Strabo *Geo.* 12.9.

five days include the day of arrival and departure.<sup>167</sup> So the earlier date of departure is, if Cicero encamped the evening of the 18th already at Cybistra, the 22nd of September.<sup>168</sup> However, if it is assumed that Cicero received the letters from Tarcondimoto (Cic. *Fam.* 15.1) later on the 18th, and he thus reached Cybistra only on the 19th of September, the date of departure would be the 23rd of September.<sup>169</sup> It is explicitly stated that Cicero arrived in Tarsus on the 5th of October, thus marching for either 12 or 13 days, depending on the assumed date of departure.<sup>170</sup> Thus, a triangular PDF between 11.5 and 12 days (for the uncertainty of the time of arrival on the 5th of October) is combined with a uniform PDF between zero and one, the latter to include the uncertainty of the day of departure.



Map F.7: Cilicia with Cicero's march from Cybistra to Tarsus (Cic. *Att.* 5.20).

Table F.7: Calculation of the marching speed for Cic. *Att.* 5.20, including the probability density functions of variables used.



[To go back to Table 4 click [here](#).]

167 Stolle 1912, 45.

168 This is what both Hunter (1913, 93) and Treggiari (1996, 8) assume.

169 Stolle (1912, 45) assumes Cicero set up camp at Cybistra only on the 20th of September, based on Cic. *Fam.* 15.1 and Cic. *Att.* 5.18 and 5.19. In these letters I, however, do not find any evidence for his reconstruction.

170 Also September had 29 days.

**Cic. Fam. 3.8**

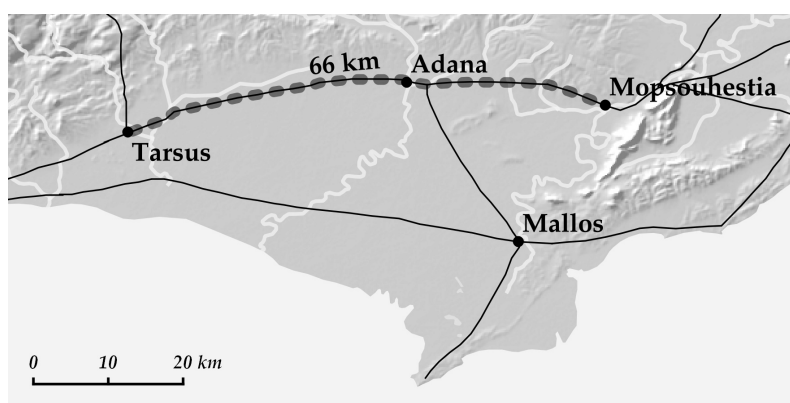
Then, from Tarsus Cicero continued his march to Mopsouhestia, on his way to the Amanus mountains.

*De nostris rebus quod scire vis, Tarso Nonis Octobr. Amanum versus profecti sumus. Haec scripsi postridie eius diei, cum castra haberem in agro Mopsouhestiae.*

You want to know something about my affairs, I have left from Tarsus towards the Amanus [mountains] on the 7th of October. I wrote this [letter] the day after that day, while I was encamped in the territory of Mopsouhestia.

(Cic. Fam. 3.8)

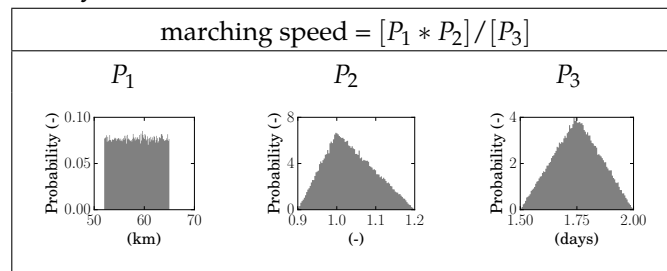
While the point of departure for this march is pointed out explicitly, Tarsus, the point of arrival is more vaguely indicated; in the territory of Mopsouhestia. In Map F.8 the relevant area is presented in order to estimate the extent of the territory of Mopsouhestia. It is assumed that the territory of Mopsouhestia was delimited on its western side by either one of the two rivers which cross the road between Adana and Mopsouhestia. As the most western river crosses the road at 13 km from Mopsouhestia, and assuming that Cicero did not pass Mopsouhestia crossing the hills at its eastern side, the marching distance is between 52 and 66 km, the latter figure indicating the entire distance from Tarsus to Mopsouhestia. A uniform PDF is assumed between these two distances, excluding the standard variations for the GIS map estimates. Regarding the marching duration, Cicero mentions that he was encamped on the second day, thus a triangular PDF between 1.5 and 2 is assumed.



Map F.8: Cilicia with Cicero's march from Tarsus to the territory of Mopsouhestia (Cic. Fam. 3.8).

[To go back to Table 4 click [here](#).]

Table F.8: Calculation of the marching speed for Cic. *Fam.* 3.8, including the probability density functions of variables used.



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