

# THE LIFE CYCLES OF COUNTERFACTUAL MODAL VERBS IN ANCIENT GREEK: TEMPORAL REFERENCE SHIFT, LANGUAGE ECOLOGY, AND ANALOGY

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## 1. THE HISTORIES OF COUNTERFACTUAL MODAL VERBS IN ANCIENT GREEK

ALTHOUGH EVERY GRAMMAR of ancient Greek<sup>1</sup> pays attention to the set of ancient Greek modal<sup>2</sup> verbs in the past tense such as ἔδει, ἐχρήν, ἐξήν, or ἐβουλόμην, corpus-based analyses of these modal verbs are rather thin on the ground. Consequently, as detailed below, the remarks on such modal verbs that we find in older standard grammars are remarkably similar to those found in modern grammars.<sup>3</sup> Though there are some corpus-based studies that investigated specific members of this large group, for example, μέλλω<sup>4</sup> or δεῖ and χρή,<sup>5</sup> and there is some recent work (e.g., in the form of insightful overviews),<sup>6</sup> an analysis of this group as a whole based on the textual data of Archaic (eighth to sixth century BCE) and Classical Greek (fifth to fourth century BCE) remains a desideratum.

Though, as described in our standard grammars, there are relevant aspects that are shared by most members of this past modal verb group, readers are left guessing as to why these modal verbs share certain characteristics that other non-modal verbs in the past imperfect do not and, more perplexingly, some other modal verbs in the past imperfect do not share. First of all, as signaled by our standard grammars, some modal verbs developed a counterfactual function, that is, to express states of affairs<sup>7</sup> that the speaker considers to be counter to his/her

1. See Goodwin 1889, 149–56; Kühner and Gerth 1898, 204–6; Stahl 1907, 355–58; Brugmann and Thumb 1913, 588–89; Schwyzler and Debrunner 1950, 307; Crespo, Conti, and Maquieira 2003, 285–86; van Emde Boas et al. 2019, 443–44.

2. The term “modal” here comprises a set of values which can be given to events to give them an undetermined factual status (Narrog 2012, 8) such as “deontic” to indicate some need for the event to take place (e.g., one *ought* to eat healthy food to stay in shape), “boulomaic” to indicate a participant’s volition to carry out an event (e.g., I *want* to go home), or “epistemic” to indicate someone’s world knowledge of an event (e.g., he *may* be right about that).

3. Contrast, for example, Kühner and Gerth 1898, 204–6 and van Emde Boas et al. 2019, 443–44.

4. See Basset 1979; Wakker 2006; Allan 2017a; Bartolotta and Kölling 2020.

5. See Ruiz Yamuza 2008; 2021.

6. Allan 2013; Revuelta Puigdollers 2017a; 2017b.

7. They can, for example, cover both stative and non-stative state of affairs, cf. *He would have been too old* vs. *He would have made a run for it*.

conception of reality,<sup>8</sup> for example, *he should (have) know(n)* = he evidently did/does not know but ought to (have). Second, these past modal verbs have, in a way, an abnormal temporal reference, because, though a verb in the past tense marked with the imperfect aspect, they can refer to the present, as in example 1:

(1) Eur. *Hipp.* 298

Nurse εἶέν, τί σιγᾶς; οὐκ ἐχρῆν σιγᾶν, τέκνον,<sup>9</sup>

Nurse (*Phaedra is silent.*) Well, why are you silent? You ought not be silent, child.<sup>10</sup>

Here, the nurse uses a counterfactual sentence to indicate that *Phaedra is silent now*.<sup>11</sup> Apart from pointing out this particular usage, grammars generally fail to explain why the past tense can have a non-past temporal reference as here when, generally speaking, it refers to the past, or why the imperfect aspect is used here rather than the aorist. In this paper, I aim to answer such questions.

At the same time, members of this group show striking differences which have thus far gone unexplained: (i) judging by the varying lists of past modal verbs given by grammars,<sup>12</sup> the development of a counterfactual meaning by such modal verbs seems more prominent or productive for some members (e.g., ἔδει) over others<sup>13</sup> (e.g., προσῆκεν), (ii) while, in contrast to non-modal counterfactual indicatives (e.g., ἄν εἶπον, “I would have said,” Ar. *Eccl.* 169), counterfactual modal verbs do not, strictly speaking, need a modal particle, some modal verbs occur in both patterns (e.g., ἔδει with ἄν). Though the latter combination is traditionally explained as involving a semantic difference,<sup>14</sup> this account does not explain why only certain modal verbs can be counterfactual with and without the modal particle. Moreover, in order to understand the different yet related usages of these modal verbs, that is, their polysemy, we need to better understand their usage differences, since those modal verbs that develop a counterfactual meaning also differ from a distributional perspective (e.g., in occurring inside or outside different types of conditional subordinate clauses).

To be able to account for both the similarities and the differences among these past modal verbs, I argue that we should adopt a historical perspective which synthesizes a top-down and a bottom-up perspective. To do so, I will provide a typology of the (counterfactual) usages of modal verbs and relate these variations to their historical development. As is emphasized in recent general linguistics, the linguistic innovations of constructions are the result of a

8. A sentence or clause is generally called counterfactual (or contrary-to-fact) when it is implied or assumed that what is said does not hold in the actual world; cf. Declerck and Reed 2001, 7; Dancygier 2006, 25.

9. The texts for this article stem from the online editions of the *TLG*.

10. The translations for this article were taken from the translations available on <https://www.loebclassics.com/> and only adapted when a loose translation did not reflect the expression of the sentence. I include the translations used in the literature cited list at the end of this article.

11. Other counterfactuals also display a tense-aspect and temporal reference mismatch, as shown by counterfactual indicative aorists that refer to the present, for which see Wakker 1994, 146–50; la Roi 2022a, e.g., (ἄν) νυνὶ παρέσχω (Dem. 18.76.4) “you would now produce”(but cannot produce now).

12. For example, Goodwin (1889, 152) provides the most elaborate list which includes periphrastic modal verbs such as οἶόν τε ἦν “was able to.”

13. Bentein (2013) observed a similar situation for verbal periphrasis where most attention had been paid to periphrasis with εἰμί and ἔχω.

14. See, e.g., van Emde Boas et al. 2019, 444 on ἔδει with ἄν.

complex interplay of diachronic and synchronic factors. Grammaticalization research has paid particular attention to so-called unidirectional paths that constructions follow in their development from referential to grammatical item across languages.<sup>15</sup> Yet, more recent approaches have rightly stressed that constructional change can be both determined by multiple source constructions<sup>16</sup> and be subject to competition with other constructions, which may either propagate or discourage an innovation, the so-called *internal ecology* of the language system.<sup>17</sup> A way to operationalize such an approach for the history of counterfactual modal verbs in ancient Greek is, I suggest, provided by the concept of the *counterfactual life cycle*.<sup>18</sup> As suggested by the biological metaphor, the *life cycle* of counterfactuals describes the historical development of counterfactuals in different stages: their genetic origin, their functional growth, and their demise. At the same time, like their metaphorical counterpart, the speed of development of counterfactual constructions is constrained by factors such as their productivity<sup>19</sup> and the availability of competing alternatives as part of a *network* of constructions. To illustrate the latter point, modal verbs in the history of English such as *should* only joined the *network of modals* after forming close links with other members of the network, for example by acquiring present-reference (though having past tense morphology) or use of the plain infinitive instead of the *to*-infinitive.<sup>20</sup> Over time, some of the members of this network fell out of use, whilst other more peripheral members (e.g., semi-modals such as “have to” or “be able to”) gained more prominence. Similarly, as I show below, many past modal verbs in ancient Greek joined the network of counterfactual modal verb constructions but some also obtained post-counterfactual usages, that is, lose their counterfactuality and start to move out of the modal counterfactuals network.

This paper is organized as follows. Section 2 provides a state-of-the-art of linguistic research into counterfactuals, both cross-linguistically and in ancient Greek. In particular, it introduces the concept of the counterfactual life cycle which is applied in the sections to follow. In section 3, I detail the histories of three subgroups of counterfactual modal verbs: the deontic modal verbs (ἐ)χρήν “ought/should,” ἔδει “it was necessary/ought,” and προσήκειν “was fitting/appropriate” (3.1); the boulomaic modal verbs ἐβουλόμην “wanted/wished,” ἠθέλον “wished,” and ἠύχόμην “wished” (3.2); and the epistemic modal verbs ἐμελλον “was likely/about to/destined to,” ἐξήν “was possible,”

15. Heine, Claudi, and Hünemeyer 1991; Hopper and Traugott 2003; Kuteva et al. 2019; Narrog and Heine 2021.

16. De Smet, Ghesquière, and Van de Velde 2015.

17. Croft 2000. See Bentein 2012 and 2013 for applications of an evolutionary language ecology approach to ancient Greek verbal periphrases.

18. Dahl (1997) coined the term, but see la Roi 2022a and 2024 for applications to ancient Greek counterfactuals.

19. The role of frequency in language change has been studied in detail by Bybee (2006; 2010). It now also holds an important place in construction grammar approaches to language change, e.g., Traugott and Trousdale 2013, 17–19. For some criticisms (e.g., in the form of low-frequency items changing whereas high-frequency items did not), see Narrog and Heine 2021, 177–78.

20. See Traugott and Trousdale 2013, 62–73.

ὕπῃργεν “was possible” (3.3).<sup>21</sup> I analyzed their occurrences across syntactic contexts, explaining below their synchronic and diachronic differences in usage. The results presented in this paper stem from a large corpus-based analysis of these past modal forms in Archaic Greek (Homer, Hesiod’s *Works and Days* and *Theogony*, and the *Homeric Hymns*) and Classical Greek (the non-fragmentary works by Aeschylus, Sophocles, and Euripides and Aristophanes; the histories of Thucydides, Herodotus, and Xenophon; the authentic works of Plato; and the orators of whom we possess the largest amount of speeches, viz. Lysias, Isocrates, Isaeus, and Demosthenes). In an attempt to provide a greater means of linguistic granularity, I have divided Classical Greek authors into fifth-century Classical Greek (i.e., Aeschylus, Sophocles, Euripides, Herodotus, Thucydides, Aristophanes, and Lysias) and fourth-century Classical Greek (i.e., Isocrates, Xenophon, Plato, Isaeus, and Demosthenes). Of course, this division is only approximate (as some authors such as Aristophanes also partly go over to the fourth century). Nonetheless, it can help us tease apart some directionalities of change within Classical Greek, as for example done by Klaas Bentein on the history of verbal periphrases in fifth- versus fourth-century Classical Greek.<sup>22</sup> Finally, section 4 integrates the findings and points toward further research opportunities.

## 2. THE LIFE CYCLES OF COUNTERFACTUALS

Cross-linguistically, counterfactuals typically consist of a marker of “potentiality” such as modal verbs and a past, a modal and a perfect or perfective element,<sup>23</sup> or a modal verb in the past imperfective.<sup>24</sup> For example, the English past modal verbs with a counterfactual meaning *He ought/should/could have done it* or the ancient Greek past imperfect(ive) modal verbs discussed in this paper combine such elements.<sup>25</sup> Historically, their counterfactual meaning typically stems from a quantity implicature: by stating a past potentiality in an attempt to be as informative as possible the speaker invites the addressee to interpret the opposite end of the modal scale, that is, not past potentiality.<sup>26</sup> In other words, inherent to counterfactuals is that they entail a *polarity reversal*:<sup>27</sup> a positive counterfactual statement actually implies a negative statement (e.g., counterfactual *he should have known* or *if he had known* means *he did not know*).<sup>28</sup>

Furthermore, counterfactual meanings are developed with reference to the past first, because the past is typically knowable and therefore pragmatically

21. The scope of this paper does not allow me to analyze other modal verbs which also develop counterfactual functions (e.g., κινδυνεύω), but those will be the subject of future studies.

22. Bentein 2013.

23. Van linden and Verstraete 2008.

24. Iatridou 2000.

25. Another option is that there is a dedicated marker for counterfactuality which is not analyzable as a combination of elements; Van linden and Verstraete 2008, 1869–70.

26. For ancient Greek, see Ziegeler 2000, 32–34; Van linden and Verstraete 2008; Wakker 1994, 152.

27. Karttunen 1971.

28. For constructions in ancient Greek that display polarity reversal (e.g., rhetorical questions, ὄλῃyou with the past indicative, and counterfactuals), see la Roi 2024, who provides an analysis of their synchronic and diachronic similarities and differences.

a useful basis to show the hearer that something is counterfactual.<sup>29</sup> Once a counterfactual meaning has been created, counterfactuals are taking part in the so-called life cycle of counterfactuals, a term coined by Östen Dahl in 1997. Apart from some (mostly theoretical) differences,<sup>30</sup> the life cycle is thought to consist of the following stages: (1) *past counterfactuality* > (2) *non-past counterfactuality* > (3) *loss or renewal of counterfactuality*.<sup>31</sup> Linguistic evidence from the histories of counterfactual constructions from different languages that supports the different stages of the life cycle and their order are the following: (i) indicative pluperfects, which were recruited for past counterfactuality in Germanic languages such as English, Norwegian, and Swedish, extended their temporal reference from past to present reference,<sup>32</sup> (ii) both perfective and imperfective counterfactuals start as past counterfactuals after which they extend to the present,<sup>33</sup> (iii) there are languages with counterfactual constructions that keep their counterfactuality as a contextual implicature rather than semanticizing it<sup>34</sup> which are, crucially, restricted to past counterfactuality,<sup>35</sup> and (iv) most importantly, past modals first develop a past counterfactual meaning after which they extend their temporal reference to the present.<sup>36</sup>

As for counterfactuals in ancient Greek, similar diachronic observations have to some extent been made, yet generally not with the full descriptive potential of the life cycle. To illustrate, the wording used by some of our standard grammars to describe counterfactual uses of modal verbs already suggested that the present-referring counterfactual usage of modal verbs developed from its past-referring counterfactual usage. For example, Kühner and Gerth<sup>37</sup> comment on counterfactual modal verbs such as ἔδει as follows: “But similarly with reference to the present [. . .] The demand itself is still valid in the present.”<sup>38</sup> More recently, linguistically informed studies supported this view, sometimes pointing to cross-linguistic parallels.<sup>39</sup> Furthermore, Emilia Ruiz Yamuza<sup>40</sup> has pointed out that in ancient Greek, as in other languages,<sup>41</sup> politeness plays an important factor in the usage of the deontic counterfactual modal verbs (ἐ)χρηῖν and ἔδει.

29. See Dahl 1997 and Ziegeler 2000. This approach stands in contrast to conceptualist analyses which deem the use of the past explainable as epistemic distance from reality, e.g., James 1982; Fleischman 1989.

30. Compare Dahl 1997; Yong 2016; 2018.

31. Dahl (1997) and Yong (2018) conceptualize it as a grammaticalization pathway. Note, however, that the life cycle may start again at the last stage of the life cycle, as exemplified by the counterfactual optative which lost its counterfactual value and was replaced by the counterfactual indicative; see la Roi 2022a. As such, the life cycle of counterfactuals can (but need not) be *cyclical*, similar to how negators participate in negative cycles, commonly called “Jespersen cycle”; see Narrog and Heine 2021, 139–45.

32. Dahl 1997, 106.

33. Yong 2016, 268; 2018, 185–86, 191.

34. In historical linguistics, one of the main recognized motors for language change is that implicatures or inferences of a construction in its context semanticize over time and subsequently extend their context of use; see Traugott and Dasher 2001; Narrog and Heine 2021.

35. Yong 2016, 240.

36. Bybee 1995; Yong 2016, 252.

37. Kühner and Gerth 1898, 205.

38. To accommodate the reader, I translated the original German, which reads as follows: “Ebenso aber auch in Beziehung auf die Gegenwart [. . .] Die Forderung selbst ist noch für die Gegenwart gültig.” Similar remarks can be found in Brugmann and Thumb 1913, 588–89.

39. Ruiz Yamuza 2008; Allan 2013, 35.

40. Ruiz Yamuza 2021.

41. Patard 2019.

She suggested that to present something that ought to have been or be done but has or is not, is a negative politeness strategy, that is, a means to avoid the loss of face by the hearer. According to her, using a strategy like *you should have helped* would then be interpreted as signaling to the hearer that nothing can be done about it anymore, which therefore is not directly threatening to the communicative face of the hearer. However, in my view her interpretation does not describe the usage of these deontic counterfactual modal verbs in a completely accurate fashion, because they seem to be used in impolite contexts as well and such modal verbs have instead been described as impolite “reproachatives” in other linguistic literature.<sup>42</sup> To illustrate, in example 1 (above), I think that the nurse signals that Phaedra is displaying unwanted communicative behavior through her silence by using εἶέν, which signals that a speaker considers a communicative act as dispreferred in reaching the current communicative goal,<sup>43</sup> and the negated counterfactual modal, which makes it explicit to Phaedra that she is not following the communicative norm because she is silent in conversation. Example 10 below seems to have an even stronger reproachative tone.

Furthermore, using a corpus study of 2074 occurrences in Archaic (424) and Classical (1650) Greek, I have shown that we possess corpus evidence of a full counterfactual life cycle in ancient Greek:<sup>44</sup> (i) the past counterfactual use of the optative, a use which was inherited from Proto-Indo-European<sup>45</sup> had extended its temporal reference from past counterfactuality, which due to its antiquity is the most rare counterfactual usage not only in Archaic Greek but across archaic Indo-European languages,<sup>46</sup> to non-past counterfactuality (i.e., its most frequent counterfactual usage in Archaic Greek), (ii) it subsequently lost its counterfactual meaning but retained its non-past reference (e.g., the most frequent usages of the optative in Archaic Greek already are potential statements or wishes about the present/future), (iii) thus triggering its replacement by a new counterfactual marker in Archaic Greek, the counterfactual indicative, which first mostly referred to the past in Archaic Greek, (iv) but extended its temporal reference to the non-past and fully replaced the older counterfactual optative in Classical Greek. Note that we also possess confounding evidence within the history of Greek to support the life cycle trajectory of the optative: the previously counterfactual ὄφελον “if only” started to lose its counterfactual meaning in Post-Classical Greek and starts to be combined with non-counterfactual moods such as the optative, subjunctive, and future.<sup>47</sup> As such, the history of this verb similarly yields a full cycle: it originally was a past deontic modal verb meaning “be obliged to,”<sup>48</sup> developed counterfactual functions (first in the past and then in the present),<sup>49</sup> changed into a

42. Van Olmen 2018.

43. La Roi 2022b.

44. La Roi 2022a.

45. For further discussion and bibliography, see Brugmann 1930, 586; la Roi 2022a, 235–40.

46. This past-referring counterfactual use is, for example, only retained in Vedic Sanskrit, Gothic, and Archaic Greek as an optative, but syncretized in the subjunctive in Archaic Latin and Old Irish; see la Roi forthcoming b.

47. See Revuelta Puigdollers 2017b, 182–83; la Roi 2021, 24.

48. This deontic meaning has its origins in a previous meaning “owe a debt,” for which see Allan 2013, 11–12.

49. See la Roi 2022a, 266–75.

particle hosting counterfactual moods such as the indicative and subsequently lost its counterfactual meaning when it started hosting non-counterfactual moods whilst retaining its non-past temporal reference.<sup>50</sup> Furthermore, I have indicated some refinements to the concept of the counterfactual life cycle, as temporal reference change (e.g., from past- to present-referring counterfactuality) is most strongly determined by the aspect and actionality<sup>51</sup> of the verb phrase in its sentential context. To illustrate, I demonstrated that in Archaic Greek, we find only two cases of extensions to present counterfactual reference among the predominantly past-referring counterfactual indicative in Archaic Greek and that these two cases are atelic imperfects; see ἀγόρευες in example 2 below, which refers to the counterfactual present where Halitherses *is* prophesying so much. This form, at least historically, competes with present-referring counterfactual optatives such as ἀνείης in the same example and Homeric Greek more generally.

(2) *Od.* 2.182–86

αὐτὰρ Ὀδυσσεὺς  
ὄλετο τῆλ', ὥς καὶ σὺ καταφθίσθαι σὺν ἐκείνῳ  
ὄφελες· οὐκ ἂν τόσσα θεοπροπέων ἀγόρευες,  
οὐδέ κε Τηλέμαχον κεχολωμένον ᾧδ' ἀνείης,  
σῶ οἴκῳ δῶρον ποτιδέγμενος, αἶ κε πόρησιν.

As for Odysseus, he has perished far away, as you also should have perished with him. Then you **would not have so much to say in your reading of signs**, or be urging Telemachus on in his anger, looking for a gift for your household, in hopes that he will provide it.

The historical motivation for the use of the imperfect and atelic actionality, as in example 1 (above), is that they construe an event without natural end (the atelic actionality) as unbounded (the imperfect's effect):<sup>52</sup> “you would have so much to say” in 2 is an event that continues because its temporal borders are not indicated nor implied. Thus, the imperfect is the first and foremost candidate for temporal reference extension due to the unbounded construal that it gives an event. Coupled with an event without natural end (viz. atelic states of affairs in their sentential context), counterfactual imperfect indicatives extended their temporal reference even more, as evidenced by the fact that they have the highest relative frequency of non-past temporal reference in Classical Greek (see table 1 below).<sup>53</sup> As shown by the frequencies, temporal reference extensions to the present are more limited for other aspects such as the aorist, because the aorist's bounded viewpoint on events implies completion and

50. This overview summarizes previous work by Ruiz Yamuza (2008), Allan (2013), Revuelta Puigdollers (2017b), and la Roi (2021; 2022a).

51. See Bertinetto and Delfitto 2000, 190, who rightly distinguish between tense (e.g., past versus present), aspect (e.g., perfective [aorist] and imperfective [imperfect]), actionality in clausal context (e.g., atelic “I live” or “we talk” vs. telic “we walk to the agora” or “he died yesterday”) and temporal reference (e.g. past-referring and present-referring).

52. Allan (2017b) provides an up-to-date overview of the imperfect's functions that fall under this descriptive header of unbounded construal.

53. Table 1 below = table 9 from la Roi 2022a, 262. La Roi also points out that other factors come into play such as (i) whether the temporal location of the event is known to the hearer, (ii) the illocutionary force of the sentence (e.g., rhetorical questions more often concerning known past events than declaratives), and (iii) collocations with temporal adverbs such as νῦν or τότε.

TABLE 1. ASPECT, ACTIONALITY, AND TEMPORAL REFERENCE OF COUNTERFACTUAL INDICATIVES WITH ἄν IN CLASSICAL GREEK DECLARATIVE MAIN CLAUSES

Tense-Aspect		Temporal Reference		
		<i>Past</i>	<i>Present</i>	<i>Future</i>
aorist	telic	136 (63%)	21 (47%)	0
	atelic	81 (37%)	24 (53%)	0
imperfect	telic	25 (30%)	22 (6%)	0
	atelic	<b>57 (70%)</b>	<b>325 (94%)</b>	<b>2 (100%)</b>
pluperfect	telic	8 (80%)	5 (62%)	0
	atelic	2 (20%)	3 (38%)	0

therefore typically triggers a past-referring reading.<sup>54</sup> In other words, though the (un)bounded value of an aspect provides a predictor for the temporal reference to some extent, the incorporation of the factor of telicity of the state of affairs in the sentential context shows that the synchronic and diachronic relation of aspect, actionality, and temporal reference is much more complex.

To sum up, there is, on the one hand, evidence for the stages of the counterfactual life cycle in ancient Greek and, on the other hand, the evidence from ancient Greek can refine our understanding of the counterfactual life cycle itself (e.g., the role of aspect and actionality in temporal reference change as discussed above). As such, the counterfactual life cycle provides a unified framework with which we can tackle the individual histories of counterfactual modal verbs in ancient Greek, which in turn can bring to light new insights into the role of modality in the life cycle of counterfactual modal verbs.

### 3. THE LIFE CYCLES OF COUNTERFACTUAL MODAL VERBS IN ANCIENT GREEK

#### 3.1. Deontic Modal Verbs: *χρή*, *δεῖ*, and *προσῆκει*

The verbs (ἐ)χρήν<sup>55</sup> “ought/should,” ἔδει “ought, was necessary,” and προσῆκεν “was fitting” have deontic usages (i.e., indicating a need for a state of affairs to be the case) that are found in what I call canonical counterfactual contexts (i.e., with

54. For an example of an aorist with present reference, see Dem. 18.76.1–4 and the collocation with *νῦν* “now.” Compare also already Wakker 1994, 132–34 for the present-referring usages of the aorist.

55. The alternation between ἐχρήν and χρήν does not seem to have had bearing on the question of past modal or counterfactual value, as it occurs with both meanings in early authors such as Aeschylus or Herodotus.



ἄν in a main or a subordinate clause,<sup>56</sup> or in a counterfactual conditional clause without it). The modal verb προσῆκεν is only very rarely<sup>57</sup> found in counterfactual contexts, but in such contexts the counterfactuality does not arise due to the modal verb but rather due to the counterfactual clause type,<sup>58</sup> that is, a counterfactual protasis or apodosis, as in example 3.

(3) Isoc. 9.40.1

Εἰ μὲν οὖν ἐπὶ μικροῖς δῖνενγκεν, τοιούτων ἄν καὶ τῶν λόγων αὐτῷ προσῆκεν ἀξιοῦσθαι· νῦν δ' ἅπαντες ἄν ὁμολογήσειαν τυραννίδα καὶ τῶν θείων ἀγαθῶν καὶ τῶν ἀνθρωπίνων μέγιστον καὶ σεμνότατον καὶ περιμαχητότατον εἶναι.

**Now if he [=Evagoras] had distinguished himself** in unimportant ways only, **it would benefit him** to be thought worthy also of praise of like nature; **but as it is**, all would admit that of all blessings whether human or divine supreme power is the greatest, the most august, and the object of greatest strife.

Here προσῆκεν refers to the counterfactual present in which he would be thought worthy of such praise under the assumption that he had actually distinguished himself in unimportant ways (note the return to “factual” matters signaled by νῦν δ’). Since προσῆκεν does not have a counterfactual meaning by itself but only in canonical counterfactual contexts, the fact that the verb in this example, from a diachronic perspective, has an extended temporal reference to the present must be explained in a similar way as non-modal imperfect indicatives in counterfactual clause types extended their temporal reference.

By contrast, the early past-referring contexts in which counterfactual ἔδει and (ἐ)χρήην are used in Classical Greek show that they themselves have a counterfactual usage without being in a counterfactual protasis or apodosis, as in examples 4 and 5 below. In other words, these modal verbs have semanticized a counterfactual usage, as is shown by their occurrence outside counterfactual conditionals and main clauses with the modal particle ἄν.

(4) Thuc. 5.42.2

λεγομένων δὲ τούτων οἱ Ἀθηναῖοι δεινὰ ἐποίουν, νομίζοντες ἀδικεῖσθαι ὑπὸ Λακεδαιμονίων τοῦ τε Πανάκτου τῆ καθαφέσει, ὃ ἔδει ὀρθὸν παραδοῦναι, καὶ πυνθανόμενοι ὅτι καὶ Βοιωτοῖς ἰδίᾳ ξυμμαχίαν ποιοῖνται, φάσκοντες πρότερον κοινή τοὺς μὴ δεχομένους τὰς σπονδὰς προαναγκάσειν

The moment this was said the Athenians were very indignant, thinking that they were wronged by the Lacedaemonians, both in **the demolition of Panactum, which ought to have been restored to them intact**, and because they heard that the Lacedaemonians had made a separate alliance with the Boeotians, although they had said before that they would join in coercing any that did not accept the treaty.

56. As suggested by Kühner and Gerth (1898, 259) and confirmed through corpus-based testing by la Roi (2023), the modal particle is necessary to mark a non-conditional subordinate clause as counterfactual, unless we are dealing with counterfactual mood attraction.

57. The four examples in my corpus are Isoc. 9.40.1, Isae. 11.5.7, Isae. 11.35.8 (with the modal particle in the main clause), and Isae. 11.24.9 (in a counterfactual conditional clause).

58. The same applies to ἐλυστέλει “it was profitable/better,” which, though listed by Goodwin as counterfactual modal verb, in fact only occurs once with a counterfactual meaning but with the modal particle in a counterfactual apodosis; see Pl. *Resp.* 589e3.

(5) Eur. *Hec.* 229–33

Hecuba αἰαῖ· παρέστηγ', ὡς ἔοικ', ἀγὼν μέγας,  
 πλήρης στεναγμῶν οὐδὲ δακρύων κενός.  
 κἄγωγ' ἄρ' οὐκ ἔθνησκον οὐ μ' ἐχρῆν θανεῖν,  
 οὐδ' ὄλεσέν με Ζεὺς, τρέφει δ' ὅπως ὀρώ  
 κακῶν κάκ' ἄλλα μείζον' ἢ τάλαιν' ἐγώ.

Hecuba O grief! It seems there is a great struggle at hand, one full of groans and with no lack of tears! **I did not die, it now appears, when I ought to have died**, and Zeus did not kill me but keeps me alive, poor wretch, only to see new misfortunes still greater than the old!

In example 4, the relative clause with ἔδει refers to a counterfactual past in which Panactum was *not* destroyed, and, in example 5, ἐχρῆν refers to the counterfactual past in which the speaker Hecuba had actually died. The aspectual choice in the infinitive is aspectually motivated:<sup>59</sup> a bounded construal of the event via the aorist infinitive thus may favor a past reading (as in examples 4 and 5) and a present infinitive an unbounded construal of the event a present reading (as in example 6), but note that this is not a strict rule (cf. the non-past referring uses of an aorist infinitive in examples 13 and 14 below).<sup>60</sup> Furthermore, both examples demonstrate the relevance of the linguistic common ground for the creation of a counterfactual meaning: the fact that the speaker wants the past modal verb to be interpreted counterfactually is clear from immediately preceding words, that is, τοῦ τε Πανάκτου τῆ καθαρέσει (“the demolition of Panactum”) which ought to have been returned intact in 4 and οὐκ ἔθνησκον (“I did not die”) when I ought to have died in 5.

As counterfactual modal verbs in the past imperfect, ἔδει and (ἐ)χρῆν can be found with present reference early on in Classical Greek, as illustrated by Philoctetes’ use of present-referring counterfactual ἔδει in example 6:

(6) Soph. *Ph.* 416–18

Phil. οἴμοι τάλας, ἀλλ' οὐχ ὁ Τυδέως γόνος,  
 οὐδ' οὐμπολητὸς Σισύφου Λαερτίω,  
 οὐ μὴ θάνωσι. τοῦσδε γὰρ μὴ ζῆν ἔδει.

Alas for me! But the son of Tydeus, and he who was palmed off on Laertius by Sisyphus, **they will never die!** For they **ought not to be alive!**

In fact, present-referring counterfactual usages were already well represented in Classical Greek authors in the fifth century, as illustrated by the corpus analysis presented in table 2 (below).

The synchronic coexistence of these diachronically related functions (i.e., (1) past deontic modal, (2) past-referring deontic counterfactual, and (3) present-referring deontic counterfactual use) is typical of evolving forms, as form-function

59. Compare van Emde Boas et al. 2019, 588–89.

60. In this respect, it is relevant to note that the behavior of so-called dynamic infinitives, which denote an event that may or may not be realized (see Rijksbaron 2006, 96–97; van Emde Boas et al. 2019, 580–81). Counterfactual modal verbs, with their variable temporal reference, do not genuinely fit under “aspectual interpretation in Temporally Fixed Contexts” where the *Cambridge Grammar of Classical Greek* puts dynamic infinitives; van Emde Boas et al. 2019, 435–37.

TABLE 2. DEONTIC PAST MODAL VERBS AS COUNTERFACTUALS  
IN CLASSICAL GREEK

Past Deontic Modal Verbs	Fifth-century Classical Greek		Fourth-century Classical Greek	
	<i>Relative frequency of counterfactuality</i>	<i>Past vs. present counterfactual reference</i>	<i>Relative frequency of counterfactuality</i>	<i>Past vs. present counterfactual reference</i>
ἔδει	24 (22%) out of 107	16 (67%) vs. 8 (33%)	62 (31%) out of 197	37 (60%) vs. 25 (40%)
(ἐ)χρήν	109 (51%) out of 215	67 (61%) vs. 42 (39%)	40 (55%) out of 72	37 (93%) vs. 3 (7%)
προσῆκ-	0 (0%) out of 13	-	4 (3%) out of 132	1 (25%) vs. 3 (75%)

pairings are layered on top of one another with older functions showing persistence in usage.<sup>61</sup> As such, a more or less expected change that we can observe from the fifth to the fourth century is that the relative frequency of counterfactual usages of ἔδει and (ἐ)χρήν slightly increases, ἔδει 22 percent to 31 percent and (ἐ)χρήν 51 percent to 55 percent.<sup>62</sup> Also, actionality of the verb phrase, though absent from table 1 (above), plays an important role in the evolution of these two counterfactual modal verbs. In both centuries, their present-referring usages show a clear predilection for atelic state of affairs (e.g., states or activities): this use of (ἐ)χρήν occurs in atelic contexts 80 percent of the time in fifth-century (= thirty-four out of forty-two) and 100 percent (= three out of three) in fourth-century Classical Greek,<sup>63</sup> the present-referring use of ἔδει occurs in atelic contexts 87.5 percent of the time in fifth- and 84 percent of the time in fourth-century Classical Greek.<sup>64</sup>

However, there are three more aspects of historical variation of ἔδει and (ἐ)χρήν that have not been fully explored yet: (1) their usage in different types of conditional periods (contrast example 7 to 11), (2) their historical loss of counterfactuality, or so-called modalization, and (3) their use and relationship with the modal particle. With regard to the first dimension, ἔδει and (ἐ)χρήν turn up in different types of conditional sentences in which we find non-modal counterfactual indicatives as well. The spread to this usage can be explained as a type of *context extension*, a process typical<sup>65</sup> of language change: a construction develops a new usage in a specific contextual environment with specific pragmatic cues for the new meaning (i.e., the so-called bridging context) but over

61. Compare Narrog and Heine 2021, 46.

62. Some of these have no infinitive at all. Since the modal verbs are stative of character, the actionality of the sentential phrase is as well.

63. Other examples from my corpus are Eur. *Med.* 890; *Hec.* 1187; *Hipp.* 297, 925; *Hdt.* 1.39.7, 2.20.8, 4.118.8.

64. Further examples found in my corpus are *Isoc.* 3.40.7; *Lys.* 14.29.4; *Eur. Andr.* 252.

65. See Narrog and Heine 2021, 57–65.

time spreads to other contexts in which it could not be used before (the so-called switch context). In examples 7 and 8 (below), ἔδει is used in a so-called *direct inferential* conditional sentence.<sup>66</sup> In contrast to predictive conditionals where the actualization of the event in the main clause temporally and logically follows from the event in the protasis, for example, *if it rains, the match will be canceled* or *if it had rained, the match would have been canceled*,<sup>67</sup> direct inferential conditional sentences provide an inference by the speaker and therefore do not need to be temporally iconic of how events transpired, for example, *my dad was at home, if my mum was not mistaken*.<sup>68</sup> In other words, the truth of the conditional sentence causes the truth of the main clause. In example 7, Socrates says that because they had to discuss much (= the long, postponed conditional), they could *not* do better.

(7) Pl. *Resp.* 484a5–b3

Soc. ἔμοι γούν ἔτι δοκεῖ ἂν βελτιόνως φανῆναι εἰ περὶ τούτου μόνου ἔδει ῥηθῆναι, καὶ μὴ πολλά τὰ λοιπὰ διελθεῖν μέλλοντι κατόψεσθαι τί διαφέρει βίος δίκαιος ἀδίκου.

Glaucon Τί οὖν, ἔφη, τὸ μετὰ τοῦτο ἡμῖν;

Socrates “To me at any rate it seems that **we would have done it still better** if we **had had to speak only about this topic and not** go through the many others that remain if we plan to examine what difference there is between a just and an unjust life.”

Glaucon “Then what do we need to discuss next?”

In example 8 (below), the speaker’s point is that there was no common justice, which he infers to be the reason that the city and its representatives have not fared alike. Note how the counterfactual use of ἔδει in the conditional sentence from example 8, on a pragmatic level, is used in a similar way as non-modal counterfactual indicatives in direct inferential conditional sentences, as shown by example 9, where Chrysothemis aggressively infers that *because* Electra does not think sensibly she does not have an agreeable life now (see turn-initial ἀλλ’).

(8) Dem. 19.147.8–12

εἰ δ’ ἐκ ταύτης αὐτῆς, τίνος εἴνεκ’ ἐφ’ οἷς ἡ πέμψασα πόλις τῶν αὐτῆς ἀπέστη, ἐπὶ τούτοις οὗτος δωρεῖας προσλαβὼν φαίνεται; τῶν γὰρ αὐτῶν ἔδει τήν τε πέμψασαν πόλιν **τυγχάνειν** καὶ τοὺς ἐκ ταύτης πρέσβεις, **εἴπερ τι** τῶν δικαίων **ἐγίγνετο**.

but if he represented this city, how comes it that by terms of treaty the city that sent him has lost property and he has increased his property by his rewards? The city and its representatives **should fare** alike, **if there were** any justice.

(9) Soph. *El.* 392–94

Chrys. βίου δὲ τοῦ παρόντος οὐ μνεῖαν ἔχεις;

Electra καλὸς γὰρ οὐμός βίωτος ὥστε θαυμάσαι.

Chrys. **ἀλλ’ ἦν ἄν, εἰ σὺ γ’ εὖ φρονεῖν ἠπίστασο.**

66. For (ἐ)χρήν, see Ar. *Pl.* 586 or Dem. 45.25.2.

67. Dancygier 2006, 25–61.

68. Declerck and Reed 2001, 42–44.

Chrys. But do you feel no concern for the kind of life you now enjoy?  
 Electra Yes, my life is wonderfully agreeable!  
 Chrys. **It would be, if you knew** how to think sensibly!

In addition, like non-modal counterfactual indicatives, ἔδει and (ἐ)χρήν are found in the main clause of so-called indirect inferential conditionals which challenge a presupposition in the common ground, such as *If (as you say) he really fought in Vietnam for three years, he would have known a lot about warfare.*<sup>69</sup> In other words, indirect inferential conditionals serve as a means to make the hearer draw an inference: *he does not know a lot about warfare so cannot really have fought in Vietnam for three years.* To illustrate further, in the following two examples from English, the speaker wants to use the falsity of the main clause to prove the falsity of the proposition in the preceding conditional clause: (i) *If my mother-in-law was coming tomorrow, I would have spent all day cleaning the house* (ii) *if he is the general manager, I am Shakespeare.* Similarly in 10, 11, and 12, the assumption in the conditional clause “proves” to be “false” according to the logic of the speaker: Jason *is* a knave (10), the Samians *were not* able to defeat Polycrates (11), and he was *not* under her influence as “proven” by his choice of adoption (12).

(10) Eur. *Med.* 585–86

Med. **χρήν σ', εἴπερ ἦσθα μὴ κακός,** πείσαντά με  
 γαμῆν γάμον τόνδ', ἀλλὰ μὴ σιγῆτι φίλων.

**if you were not a knave, you ought to have** gained my consent before making this marriage, not done it behind your family's back.

(11) Hdt. 3.45.10–13

εἰσὶ δὲ οἱ λέγουσι τοὺς ἀπ' Αἰγύπτου νικῆσαι Πολυκράτεια, λέγοντες ἐμοὶ δοκέειν οὐκ ὀρθῶς· **οὐδὲν γὰρ ἔδει** σφεας Λακεδαιμονίους ἐπικαλέεσθαι, **εἴπερ αὐτοὶ ἦσαν ἱκανοὶ Πολυκράτεια παραστήσασθαι.**

There is another story, that the Samians from Egypt defeated Polycrates; but to my thinking this is untrue; for **if they were able to master Polycrates by themselves, they would have had no need** of inviting the Lacedaemonians.

(12) Isae. 2.19.8

ὥστ' εἴ γ' ἐκείνη πεισθεῖς τὸν υἱὸν ἐποιεῖτο, τῶν ἐκείνης παίδων τὸν ἕτερον **ἐποίησατ' ἄν·** δύο γάρ εἰσιν αὐτῆ.

**if** it had been under her influence that he was adopting his son, **he would have adopted** one of the other boys; for she has two.

Note again how the deontic modal is used as a means of impoliteness in example 10 by Medea to reproach Jason, rather than as a politeness strategy.<sup>70</sup>

Furthermore, due to the speed of temporal reference change that imperfective counterfactuals display, ἔδει and (ἐ)χρήν acquired post-counterfactual uses quite

69. Declerck and Reed 2001, 44.

70. Pace Ruiz Yamuza 2021.

early on; this means that these modal verbs came to be used to refer to something that is desired for the present or future but not contextually indicated to be counterfactual (e.g., *he ought to go to the gym tomorrow*). In other words, from their original past deontic value (i), they had developed a past deontic counterfactual use (ii), subsequently a non-past deontic counterfactual use (iii), and ultimately a non-counterfactual non-past deontic usage (iv); in fact, the non-past temporal reference that they had acquired over time was the diachronic link from which they could develop a non-past usage in which they are not counterfactual anymore. As such, they arrived at the tail end of their life cycle, similar to other counterfactuals in the history of ancient Greek such as the optative which developed non-counterfactual functions and the particle ὄφελον which started to lose its counterfactual meaning. In 13, Socrates uses χρῆν ὑμᾶς εὐλαβεῖσθαι “you ought to be on your guard” to report a warning that his detractors told his audience before Socrates’ defense. Since the modal verb phrase refers to something which still had to happen (cf. the subjunctive ἐξαπατηθῆτε), the outcome of which is not predetermined, the phrase is not counterfactual here. In other words, in this use, χρῆν has lost its counterfactuality<sup>71</sup> and became “modalized,” showing similarities to original past modal forms such as English *ought*, which is not used to refer to the past anymore (e.g., *He ought to pass by tomorrow*).<sup>72</sup>

(13) Pl. *Ap.* 17a3–7

καίτοι ἀληθές γε ὡς ἔπος εἰπεῖν οὐδὲν εἰρήκασιν. μάλιστα δὲ αὐτῶν ἐν ἐθαύμασα τῶν πολλῶν ὧν ἐψεύσαντο, τοῦτο ἐν ᾧ ἔλεγον ὡς χρῆν ὑμᾶς εὐλαβεῖσθαι μὴ ὑπ’ ἐμοῦ ἐξαπατηθῆτε ὡς δεινοῦ ὄντος λέγειν.

yet there is hardly a word of truth in what they have said. But I was most amazed by one of the many lies that they told—when they said that **you must be on your guard** not to be deceived by me, because I am a clever speaker.

Similarly in 14, ἔδει is used to express where Dionysius must stop now, which he does.

(14) Ar. *Ran.* 35–39

Dion.      κατάβα, πανούργε. καὶ γὰρ ἐγγὺς τῆς θύρας  
              ἤδη βαδίζων εἰμὶ τῆσδ’, οἱ πρῶτά με  
              ἔδει τραπέσθαι. παιδίον, παῖ, ἡμί, παῖ.  
 Heracles    τίς τὴν θύραν ἐπάταξεν;

Dionysius    Dismount, you scamp! Here I am at the door that **ought to be** my first stop.

(knocking) Boy! (knocking with his club) Boy, I say, boy!

*Heracles is heard from within, then opens the door.*

Heracles      Who banged on the door?

71. Note that Ruiz Yamuza (2021, 280) already noted that not all of the uses of ἔδει and (ἐ)χρῆν were counterfactual. She explains those non-counterfactual uses from a politeness perspective, as counterfactual modal forms are coopted for politeness purposes; cf. Patard 2019. I underline here that they are the result of the loss of counterfactuality as a later stage in the life-cycle of counterfactual modal verbs.

72. I adopt the term from Krug (2000), who uses the term to refer to the process whereby lexical modal verbs turn into modals in English (e.g., want to > wanna) and undergo changes on semantic, formal, and syntactic levels. For a parallel from the history of English modals such as *should*, see Bybee 1995.

The presence of such post-counterfactual usages thus influences our interpretation of the data in table 2 (above). These post-counterfactual usages actually already surface in fifth-century Classical Greek, fifty-two times (= 24 percent of all uses) for (ἐ)χρηῖν<sup>73</sup> and ten times (= 9 percent of all uses) for ἔδει. Their increased saliency in the polysemy of these modal verbs in fourth-century Classical Greek (twenty-three times [= 32 percent of all uses] for (ἐ)χρηῖν and thirty-four times [= 17 percent of all uses] for ἔδει) could explain the low frequency of present-referring counterfactual usages in fourth-century Classical Greek: the ambiguity of counterfactual or non-counterfactual reference will have contributed to the loss in saliency of the present counterfactual use. Moreover, reinterpreting the numbers in table 2 (above) with these later post-counterfactual usages included, this means that, in fifth-century Classical Greek, (ἐ)χρηῖν was actually only used to refer to its original non-counterfactual past meaning in 25 percent of the cases (i.e., fifty-four times), whereas ἔδει in 68 percent of the cases (i.e., seventy-three times); in fourth-century Classical Greek, the original non-counterfactual past usage took up 12 percent (= nine times) of (ἐ)χρηῖν and 51 percent (= 101 times) ἔδει. The relative distribution of those post-counterfactual usages thus helped illustrate the decrease in functional prominence of the original past deontic use.

Finally, we should address the complicated relationship of ἔδει and (ἐ)χρηῖν with the modal particle, that is, in canonical counterfactual contexts. As we know, ἔδει and (ἐ)χρηῖν do not need the modal particle to be used counterfactually, because the counterfactual meaning which originated as an implicature is semanticized in the usage of the verb, as detailed above. Nonetheless ἔδει and (ἐ)χρηῖν are found with the modal particle. Grammars of ancient Greek have for at least more than a century<sup>74</sup> put forward the following type of synchronic explanation in order to account for examples such as 15 and 16 (below): when a counterfactual modal verb such as ἔδει occurs with ἄν (as in 16), there is a difference in meaning; in the construction *without* ἄν only the *target* of the necessity is/was not realized whereas *with* ἄν the *necessity* itself did/does not exist.<sup>75</sup>

(15) Dem. 21.189

καίτοι καὶ εἰ τούτων ἦν πονηρότατος, κατὰ τοὺς νόμους ἔδει παρ' ἐμοῦ δίκην λαμβάνειν, οὐκ ἐφ' οἷς ἐλητούργουν ὑβρίζειν.

Yet **even if I were** the most unscrupulous of that gang, I **ought** rather to be punished according to the laws than insulted in the performance of a public service.

73. An example of ἐχρηῖν is Eur. *Andr.* 423–24, ἐς ζύμβασιν δ' ἐχρηῖν σε παῖδα σὴν ἄγειν, Μενέλαε, καὶ τήνδ', ὡς ἀπαλλαγθῆ πόνον ("But you, Menelaus, must bring your daughter and this woman to an agreement so that she may escape misfortune").

74. This traditional explanation goes back all the way to Hermann in the early nineteenth century, for which compare Goodwin 1890, 78, but this explanation has been repeated in grammars and research since: Goodwin 1889, 404–9; Kühner and Gerth 1898, 206; Stahl 1907, 357; Schwyzer and Debrunner 1950, 309; Smyth and Messing 1968, 521; Rijksbaron 2006, 26; Ruiz Yamaza 2008, 127. Goodwin (1890) is more nuanced as he critically discusses both counterfactual usages with and without the modal particle. Although he suggests (among others) that the rule does not have general application, he still reads a synchronic difference in meaning in the two groups.

75. See, e.g., van Emde Boas et al. 2019, 444.

(16) Pl. *Grg.* 514a5–10

Εἰ οὖν παρεκαλοῦμεν ἀλλήλους, ὃ Καλλίκευς, δημοσίᾳ πράζοντες τῶν πολιτικῶν πραγμάτων ἐπὶ τὰ οἰκοδομικά, ἢ τευχῶν ἢ νεωρίων ἢ ἱερῶν ἐπὶ τὰ μέγιστα οἰκοδομήματα, **πότερον ἔδει ἄν** ἡμᾶς σκέψασθαι ἡμᾶς αὐτοὺς καὶ ἐξετάσαι πρῶτον μὲν εἰ ἐπιστάμεθα τὴν τέχνην ἢ οὐκ ἐπιστάμεθα, τὴν οἰκοδομικήν, καὶ παρὰ τοῦ ἐμάθομεν; **ἔδει ἄν** ἢ οὐ;

Then **if** you and I, Callicles, in setting about some piece of public business for the state, were to invite one another to see to the building part of it, say the most important erections either of walls or arsenals or temples, **ought we to consider** and examine ourselves, first as to whether we understood the art of building or not, and from whom we had learnt it? **Would we have to do** this, or not?

Yet, this explanation does not seem tenable, as it does not (i) accurately explain how counterfactuality arises in sentential context, (ii) nor account for the availability of the same usage with and without ἄν, and (iii) glosses over the role played by diachrony for these occurrences with ἄν. As for the first point, the explanation wrongly treats a counterfactual proposition as belonging to just one part of the clause which we can separate through logical reasoning, that is, either the past necessity being “false” (i.e., the modal verb in isolation) or the action in the infinitive dependent on the necessity being “false” (i.e., the infinitive conjoined with the modal verb). A state of affairs as a whole in its clausal context is what is indicated to be counterfactual, for example, *he ought to have come to the party yesterday* = there was a past necessity (= modal verb) that he came to the party yesterday (= infinitive complement) but he did not (= modal verb & infinitive complement in sentential context). Crucially, the past necessity as expressed by the modal verb in isolation (e.g., *he ought to*) cannot be called counterfactual, but only in combination with its contextual complement (e.g., *he ought to have come yesterday*).<sup>76</sup> As for the second point, no such functional difference in counterfactual uses of modal verbs without ἄν and with ἄν can be discerned.<sup>77</sup> Compare the two examples of ἔδει without ἄν (example 15) and with ἄν (example 16). In example 15 as well as in example 16 only the *combination* of the modal verb ἔδει “ought to” with the infinitival complement, resp. to be punished and consider, is what is counterfactual: in example 15 the speaker is not punished like that and in example 16 Socrates and Callicles are not considering and examining themselves because they are not examining a building together (see the preceding counterfactual protasis). Thus, counterfactual usages of the modal verb are used to express that something would have been necessary to happen but did/does not, with the counterfactual scenario being introduced by the preceding counterfactual conditional clause. In fact, it is the third point which, I think, provides the key to why the modal particle starts to be found with such counterfactual modal verbs: the modal particle has been added diachronically via *analog* with the use

76. The presentation in Rijksbaron 2006, 26 is even more confusing since his example of ἔδει with the modal particle has a negation which, due to the polarity reversal of the counterfactual, gives the sentence a positive reading: see la Roi 2024, 18.

77. An exception is where ἔδει occurs with ἄν in the meaning “need (for)” with a genitive complement, for which see Pl. *La.* 184d1 and *Phd.* 108a1.



of the modal particle ἄν with non-modal verbs, that is, a form of rule generalization.<sup>78</sup> The modal verb occurs without ἄν in main clauses twenty-five times but seventeen times with ἄν in Classical Greek and gains prominence over time: in Herodotus, Aristophanes, and Sophocles (1 vs. 0), in Thucydides (1 vs. 2), but in Demosthenes (8 vs. 5) and in Plato (8 vs. 7). Similarly, χρῆν already had semanticized a counterfactual meaning (see counterfactual χρῆν without ἄν in Eur. *El.* 357) but still it comes to be used with ἄν (e.g., Dem. 18.195 τί ἄν . . . προσδοκῆσαι χρῆν; “what should we have expected?”).

### 3.2. Boulomaic Modal Verbs: βούλομαι, θέλω, and εὔχομαι

In contrast to the very productive counterfactual deontic modal verbs ἔδει and (ἐ)χρῆν, counterfactual uses of past boulomaic modal verbs are much less productive in Archaic and Classical Greek. A key indication of this is that most modal verbs occur only in canonical counterfactual contexts, in either the imperfect or aorist for the chosen aspectual viewpoint; for example, the volitional verb εὔχομαι “pray, wish” is only found in a counterfactual context twice, with the modal particle (Aesch. *Ag.* 963 ἄν ηὔξαμην referring to the past and Ar. *Eccl.* 141 ἄν ηὔχοντ’ referring to the present). Similarly, the verb θέλω only occurs in canonical counterfactual contexts with the modal particle (e.g., Soph. *Aj.* 88 ἤθελον δ’ ἄν; *OT* 1384 ἠθέλησα . . . ἄν; or *Ph.* 427 ἄν ἠθέλησ’) or in counterfactual conditional clauses (e.g., Eur. *Hipp.* 618 ἠθέλες or Lys. 13.52.3 ἠθέλησας). The volitional verb βούλομαι, however, does seem to show some signs of going through the life cycle of counterfactuals. First of all, in early fifth-century Classical Greek authors, we find ἐβουλόμην without the modal particle and referring to the present, as in example 17 from Aeschines.

(17) Aeschin. 3.2

ἐβουλόμην μὲν οὖν, ὃ ἄνδρες Ἀθηναῖοι, καὶ τὴν βουλὴν τοὺς πεντακοσίους καὶ τὰς ἐκκλησίας ὑπὸ τῶν ἐφεστηκότων ὀρθῶς διοικεῖσθαι, . . .

**I would have wished**, indeed, fellow citizens, that **the Senate** of Five Hundred and the assemblies of the people **were properly conducted** by those who preside over them . . .

Originally, this past modal verb referred to the non-counterfactual past, compare *Od.* 4.275 ὃς Τρῶεσσιν ἐβούλετο κῦδος ὀρέξαι (“who wished to grant glory to the Trojans”). Its counterfactual value must derive from a quantity implicature, an implicature that is particularly evident in its use in the first singular: saying that “*I wanted to X (in the past)*” as a conversationally relevant utterance implicates that this past wanting was and still is relevant. As such, it invites the inference that it must have not been realized, as that would be an expected communicative motivation for mentioning a past volition.<sup>79</sup> As shown by table 3 below, the counterfactual usages of these modal verbs are more infrequent (relative to their overall frequency) than for the deontic counterfactual modal verbs, which has to do with

78. For the effects of analogy on grammatical change, see Hopper and Traugott 2003, 63–70.

79. Another potential inference is that the speaker uses a past form for politeness purposes (e.g., “I wanted to ask you [now]”), which occurs frequently across languages (Nijk 2021, 11), but such examples are actually not attested in our corpus evidence for Classical Greek, which makes this parallel difficult to uphold.

TABLE 3. BOULOMAIC PAST MODAL VERBS AS COUNTERFACTUALS  
IN CLASSICAL GREEK

	Fifth-century Classical Greek		Fourth-century Classical Greek	
	<i>Relative frequency of counterfactuality</i>	<i>Past vs. present counterfactual reference</i>	<i>Relative frequency of counterfactuality</i>	<i>Past vs. present counterfactual reference</i>
ἐβουλ-	34 (23%) out of 145	17 (50%) vs. 17 (50%)	56 (25%) out of 225	33 (59%) vs. 23 (41%)
ἦθελ-	17 (14%) out of 118	8 (47%) vs. 9 (53%)	20 (17%) out of 119	10 (50%) vs. 10 (50%)
ἦυχ-	2 (7%) out of 29	1 (50%) vs. 1 (50%)	–	–

the fact that they mostly occur in canonical counterfactual contexts. Yet, as discussed further below, ἐβουλόμην used counterfactually in the first singular shows some use outside canonical counterfactual contexts, including extended temporal reference to the present.

Furthermore, besides the temporal reference extension, the counterfactual use of ἐβουλόμην seems to have had a syntactic reflex; in example 18, the counterfactual contents of the wish are represented by a counterfactual conditional clause rather than an infinitive, highlighting the counterfactuality of the proposition (i.e., your brother were leading me into his prosperous house).

(18) Eur. *El.* 396–98

Orestes αἰνῶ μὲν οὖν τοῦδ' ἀνδρὸς ἐσδοχὰς δόμων,  
**ἐβουλόμην δ' ἂν** εἰ κασίγνητός με σὸς  
 ἐς εὐτυχούντας ἦγεν εὐτυχῶν δόμους.

Orestes I gratefully accept the hospitality of this man. But **I wish** your brother, returned to prosperity, **were leading me** into his prosperous house.

Though unique in Classical Greek (but not elsewhere)<sup>80</sup> and therefore simply deleted by some, Evert van Emde Boas<sup>81</sup> has rightly noted that the varying appreciations of Orestes' scene of deception by critics has led to too much deletion.<sup>82</sup> In other words, the use of a construction unique to Classical Greek, underlining

80. See P. Giss. 1.17.10–12, second century CE, private letter: ὄφελον εἰ ἐδυνάμεθα πετᾶσθαι καὶ ἐλθεῖν καὶ προσκυνῆσαι σε ("Would that we were able to fly and come and embrace you," trans. Bagnall and Criamore 2006).

81. van Emde Boas 2017, 177–85.

82. van Emde Boas (2017, 178) summarizes the point well: "The point, trivial but apparently worth underlining again, is that the literary *Stilgefühl* of modern critics cannot by itself suffice as an argument for deleting entire passages from Greek tragedy, especially when those passages are on the one hand a clear mark of an author's style (and generalizations are a mark of Greek authors in general and of Euripides in particular), and on the other hand alien to what most modern critics would consider agreeable."

the counterfactuality of the proposition, would fit with the context of Orestes' language of deception: "Orestes brings out the rest of his deceptive arsenal in the form of references to himself in the third person (Ἀγαμέμνονος παῖς 392, 'Agamemnon's son'; κασίγνητος . . . σός 397, 'your brother') and ironical ambiguity (ὁ τε παρών ὁ τ' οὐ παρών 391, 'the one who is here and the one who is not here')."<sup>83</sup>

As for the modal particle, only the volitional verb βούλομαι do we find both without and with modal particle, since the other modal verbs occur solely in canonical counterfactual contexts. In particular, we only find volitional verb βούλομαι without the modal particle in my corpus when it is in the first-person singular imperfect (Isae. 10.1.1; Dem. 55.9.4) and there are more such occurrences outside my corpus (Aeschin. 3.2; Antiph. 5.1.1, 5.1.14). Since some of these examples also refer to the present (e.g., example 17 above), I would argue that modal particle analogy is likely to have played a role with ἐβουλόμην as well. After all, the use of the modal particles in orators more often display the genuine liberties of Classical Greek morphosyntax, as illustrated by the contested occurrences of future indicatives with the modal particle in orators<sup>84</sup> or the questionable rule that a potential optative when missing the modal particle in the main clause should be supplied with one.<sup>85</sup> Finally, adding the modal particle to a modal verb with the potential for counterfactuality by itself seems to have been an Attic Greek phenomenon, as ἐβουλόμην occurs in its counterfactual meaning without the modal particle in early Post-Classical Greek papyri (P. Petrie 3.53q.5, third century BCE; BGU 8.1785.3, first century BCE) and some Post-Classical Greek authors (e.g., Plut. *Vit. Fab.* 16.5.4; Dio. Chrys. *Or.* 2.19.1), the latter also employing the use with the modal particle for reasons of Atticism.<sup>86</sup>

### 3.3. Epistemic Modal Verbs: μέλλω, ἔξεστι, ὑπάρχω, ἔνεμι

Counterfactual usages of past forms of the modal verbs μέλλω ("be likely/about to"), ἔξεστι ("be possible"), ὑπάρχω ("be possible"), ἔνεμι ("be possible") are also not very productive, since at least half of them occur in canonical counterfactual contexts: ὑπάρχω eight times, only in a main clause with the modal particle (e.g., Thuc. 7.13.1.2 or Eur. *Hec.* 1229) or in a counterfactual conditional clause (Isae. 7.29.4), ἔνεμι occurs twice, only in a counterfactual conditional (Isoc. 12.96.1; Ar. *Lys.* 572). By contrast, past forms of μέλλω and ἔξεστι *do* occur without the modal particle as well and also outside canonical counterfactual contexts, which is why I focus on these two. Of the two, μέλλω already has developed counterfactual usages in Archaic Greek, whereas ἔξην only seems to have acquired counterfactual meanings in Classical Greek. The pragmatic origins of their counterfactual meaning can be glanced from their usage context, for which see examples 19, 20, and 21 (below). In example 19, the counterfactual meaning of ἔμελλε is created compositionally by the sentence as a whole: he was about to beg but got stopped = past counterfactual that he begged.

83. van Emde Boas 2017, 185.

84. See Zingg 2017 in the corpus of Isocrates; *contra* Kühner and Gerth 1898, 206.

85. See Bers 1984, 128–35 and la Roi 2022c, 129–31; *contra* Kühner and Gerth 1898, 226.

86. See la Roi forthcoming a.

(19) *Il.* 10.454–56

Ἦ, καὶ ὁ μὲν μιν ἐμελλε γενείου χειρὶ παχείῃ  
 ἀψάμενος λίσσεσθαι, ὁ δ' αὐχένα μέσσον ἔλασσε  
 φασγάνῳ αἴξας, ἀπὸ δ' ἄμφω κέρσε τένοντε·

He spoke, and the other **was about to touch** his chin with his stout hand and **beg him, but** Diomedes sprang on him with his sword and **struck him** square on the neck, and **sheared off** both the sinews.

Examples such as 19 resemble the direct inferential conditionals with a counterfactual meaning mentioned earlier. In Homer, we often find these in the voice of the Homeric narrator,<sup>87</sup> of the type “X would have Y, if not Z had prevented it.” Here, as in examples 19 and 20, the counterfactuality of the following clause causes the counterfactuality of the main clause: (I, the speaker, think that) because Y prevented it, X could not Y; (19) because Diomedes struck him, he could not beg; (20) because Agamemnon spoke, Odysseus could not perish. I have recently<sup>88</sup> shown how such contexts functioned as a bridging context,<sup>89</sup> that is, usage contexts triggering a new meaning, for the replacement of the counterfactual optative by the counterfactual indicative in Archaic Greek. Thus, such contexts also play a diachronic role in the creation of the past counterfactual meaning of μέλλω.<sup>90</sup>

(20) *Od.* 13.384–86

ὦ πόποι, ἦ μάλα δὴ Ἀγαμέμνωνος Ἄτρεΐδαο  
 φθείσεσθαι κακὸν οἶτον ἐνὶ μεγάροισιν ἐμελλον,  
 εἰ μὴ μοι σὺ ἔκαστα, θεά, κατὰ μοῖραν ἔειπες....”

“Ah me! In all truth I **was to have perished** in my halls by the evil fate of Agamemnon, son of Atreus, **had you** not, goddess, duly told me all....”

By contrast, the counterfactual meaning of ἐξῆν is created with the use of common ground knowledge, as shown in example 21. Here an anonymous man reflects on Xerxes’ crossing of the Hellespont and mistakes Xerxes for Zeus: ἄνευ τούτων picks up on this (false) presupposition, which functionally resembles a counterfactual conditional (= if you had not done it with those means) and of course narratologically serves as a means of indirect characterization.<sup>91</sup>

(21) *Hdt.* 7.56.8

ὦ Ζεῦ, τί δὴ ἀνδρὶ εἰδόμενος Πέρση καὶ οὔνομα ἀντὶ Διὸς Ξέρξην θέμενος ἀνάστατον τὴν Ἑλλάδα θέλεις ποιῆσαι, ἄγων πάντας ἀνθρώπους; καὶ γὰρ ἄνευ τούτων ἐξῆν τοι ποιεῖν ταῦτα.

O Zeus, why have you taken the likeness of a Persian man and changed your name to Xerxes, leading the whole world with you to remove Hellas from its place? **You could have done that without these means.**

87. In narratological studies these constructions are called *if-not* situations, e.g., De Jong 1987; Richardson 1990.

88. La Roi 2022a, 246–48.

89. See Narrog and Heine 2021, 58–66.

90. Note that this meaning is not mentioned by Bartolotta and Kölligan (2020), who discuss μέλλω and counterfactual indicatives in Homer. However, Basset (1979, 187–89) already noted the contextual creation of this counterfactual meaning.

91. Compare Walker 1993, who discusses the narratology of anonymous spectators in Classical Greek historiography.

Also, as the other counterfactual modal verbs, these modal verbs extend their temporal reference, as indicated by present-referring verb phrases in examples 22 and 23 (below). In 22, the father does want to dispose of her, but the point of the counterfactual is that this is against the law as he has male heirs. In 23, there is no such man who would, that is, the counterfactual conditional of which the relative clause with ἔμελλεν is a part of via counterfactual mood attraction,<sup>92</sup> as also shown by the counterfactual matrix clause.

(22) Isae. 10.13.1–4

καὶ τῷ μὲν πατρὶ αὐτῆς, εἰ παῖδες ἄρρενες μὴ ἐγένοντο, οὐκ ἂν ἐξῆν ἄνευ ταύτης διαθέσθαι: κελύει γὰρ ὁ νόμος σὺν ταύταις κύριον εἶναι δοῦναι, ἐάν τῳ βούληται, τὰ ἑαυτοῦ;

For her own father, **if he had no male heirs, it would not be possible** to dispose of his estate without disposing of her with it; for the law ordains that he may dispose of his property to whomsoever he wishes, if he disposes of his daughters with it.

(23) Dem. 23.94

εἰ μὲν γὰρ μηδεὶς ἄλλος ἦν ὅστις ἔμελλεν ὁμοίως τούτῳ τῶν συμφερόντων ὑμῖν ὀλιγορήσας γράφειν, ἴσως ἂν ἦν τοῦτο

**If there were** no other man **who would propose** decrees like his without regard to your interests, the matter **might, perhaps, be** a simple one.

Moreover, as I have discussed elsewhere,<sup>93</sup> μέλλω also starts to be found in future-referring canonical counterfactual contexts, when the speaker can be certain enough that the event will not be realized (e.g., εἰ μὲν οὖν ἄλλοι τινὲς ἔμελλον περὶ ἐμοῦ διαγνώσεσθαι, “if *another court* were to judge me [than the current one],” Lys. 3.2.1).

As for the modal particle, it is completely absent from the counterfactual usages of μέλλω, but does start to occur with ἐξῆν,<sup>94</sup> as in example 22 above, thus showing how ἐξῆν too was affected by analogical pressures from canonical counterfactuals: counterfactual ἐξῆν with ἂν only occurs five times in main clauses (four of which refer to the present, but fifteen times without the modal particle).

#### 4. CONCLUSIONS

In this paper, I explained the synchronic variation of past modal verbs that develop counterfactual meanings as different diachronic stages of the counterfactual life cycle, showing that modal verbs developed counterfactual functions quickly (due to the imperfective aspect) and along relatively predictable stages. First, their combination of a past imperfect tense with a modal component and a dependent

92. Because the relative clause follows a counterfactual conditional clause and the event it expresses is temporally and logically connected to it, it is a genuine case of mood attraction. After all, when a counterfactual subordinate clause follows a non-counterfactual matrix clause it does need to be marked by the modal particle, for example, with relative clauses (Ar. Lys. 109 or Dem. 45.13.10), *contra* Goodwin 1889, 214–15, a dependent question (Isoc. 11.8.4), a purpose clause (Pl. Leg. 967b3), a causal clause (Eur. Alc. 555), or a result clause (Lys. 14.27 or Isoc. 16.7.4).

93. La Roi 2022a, 252–53.

94. Other examples are Lys. 4.13 and D. 24.146.2. It also occurs in an insubordinate wish in Ar. Eccl. 938. Counterfactual uses in main clauses without the modal particle include Hdt. 7.56.8 and Isoc. 17.29.3.

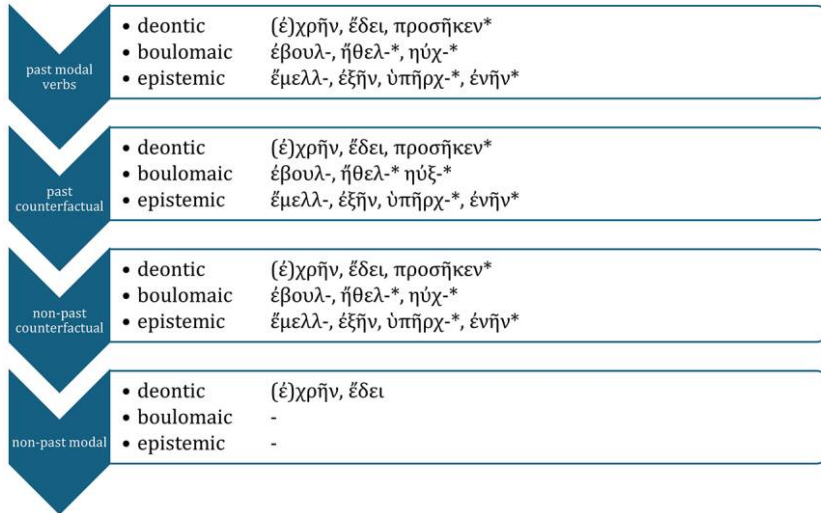


FIG. 1. The life cycles of counterfactual modal verbs in ancient Greek (eighth to fourth centuries BCE).

infinitive is what generated a counterfactual meaning through a quantity implicature. Second, these counterfactual modal verbs extended their temporal reference to the present, facilitated by the unbounded aspectual value of the imperfect and the highly frequent use of atelic events so as to imply continuing duration. The bounded viewpoint that the aorist gives to past events typically invites past-referring readings, which is why present-referring counterfactual modal verbs in the aorist are much less frequent and, probably, why the polyfunctional group of modal verbs that are used counterfactually, in general, mainly occur in the past imperfect. Third, the productivity of the different counterfactual modal verbs is influenced by language ecological factors: deontic counterfactual modal verbs, for which there are no genuine alternative expressions, are far more productive than boulomaic and epistemic counterfactual modal verbs, for which there are alternatives, respectively in the form of so-called insubordinate counterfactual wishes with εἰ γάρ or εἴθε and the past indicative and epistemic counterfactual indicatives.<sup>95</sup> Fourth, I have demonstrated that these life cycles are very much individual histories, because the different contexts in which modal verbs are used in a counterfactual way are not only a reflection of synchronic but also especially of diachronic variation; some modal verbs occur only in canonical counterfactual contexts in Classical Greek, for example, deontic προσῆκεν, boulomaic ἤθελ- or ηὐχ-, and epistemic ὑπῆρχ- or ἐνῆν, signaled by the asterisks in figure 1 (above). Others, such as deontic (έ)χρηῖν or ἔδει, boulomaic ἐβουλ- or epistemic ἔμελλ- or ἐξῆν, occur both outside those contexts

95. See la Roi 2021 for a detailed introduction of the notion of insubordination, the process by which formally subordinate clauses turn into main clause units (e.g., εἰ “if” wishes, ὅπως “that” directives), and see la Roi 2022a for distributional data.

as they have semanticized a counterfactual function and within such contexts, (ἐ)χρη̃ν, ἔδει, ἐβουλ-, and ἐξ̃ην. Yet, these also gained the “canonical” use with the modal particle via analogy with this pattern. The synchronic variations in usage of these modal verbs thus need to be understood as reflecting diachronic changes. Fifth and finally, the counterfactual modal verbs (ἐ)χρη̃ν and ἔδει are already making their way out of the counterfactual modal network, as they obtain non-counterfactual usages which refer to the non-past (of the type: *I ought to go to the gym today/tomorrow*). Crucially, such uses seem to become available for other modal verbs as well but not yet in Classical Greek.<sup>96</sup> Figure 1 (above) summarizes the life cycle of these modal verbs.

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96. To illustrate, ἐβουλόμην starts to be found with non-counterfactual politeness functions in Post-Classical Greek, e.g., NT *Act.* 25.22, Ἐβουλόμην καὶ αὐτὸς τοῦ ἀνθρώπου ἀκοῦσαι. Αὔριον, φησὶν, ἀκούσει αὐτοῦ (“‘I would like to hear the man myself.’ ‘Tomorrow,’ he said, ‘you will hear him’”).

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