The Development of εὑρίσκω 'find' as Evidence towards a Diachronic Solution of the Matching-Problem in Ancient Greek Complementation

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This paper traces the semantic and constructional development of the complement-taking verb εὑρίσκω 'find' from Homeric Greek to Post-Classical Greek. First, the paper details the semantic development of εὑρίσκω using characteristics such as predicate type, semantic role of the subject and factivity. Subsequently, explanations are offered for the constructional development of εὑρίσκω, using insights from grammaticalization research such as reanalysis and analogy. In contrast to previous studies on Ancient Greek complementation which support the idea of a systematic Classical Greek opposition of factive participial versus non-factive infinitival complementation, this paper shows how bridging contexts of mental judgment εὑρίσκω with a participial complement do not follow this opposition as they are non-factive and changed their meaning (with reanalysis) before changing their complementation structure (through analogy). Also, by extending our view to the individual history of other cognitive predicates (ἐπίσταμαι, γιγνώσκω and οἶδα) the author shows that other cognitive predicates undergo similar developments from factive+object to factive+ACP to non-factive+ACI, although their individual histories are still in need of a systematic diachronic account. Thus, complementation patterns per period could be analysed in a more fine-grained way by analysing complementation patterns bottom-up from the semantic and constructional evolutions of individual predicates. Also, the findings from this paper provide evidence towards a diachronic solution of the so-called matching-problem: diachronically related semantic and constructional stages strongly motivate the choice of a specific complementation structure but absolute factivity oppositions in Classical Greek complementation are rather strong tendencies.

Keywords: Ancient Greek complementation, matching-problem, factivity, reanalysis, analogy, εὑρίσκω, cognitive predicates.

1. Introduction

Cross-linguistic investigations of verbs meaning 'to find' have yielded substantial evidence for a process of diachronic change from 'discovery of someone/something' all the way to 'consider as', as in English 'I found the dog in the yard' versus 'I find the issue rather complex'. Cross-linguistic examples of 'find' verbs developing such more abstract senses are French 'trouver', Italian 'trovo', Dutch 'vinden' and, of course, the best studied English

'find'.[1] Possible developments of Ancient Greek εὑρίσκω 'to find' have not been delved into yet. However, as illustrated by the following examples, εὑρίσκω referred not only to finding someone (1), but also to discovering something (2) and to finding in the sense of an opinion (3). Relevant from a diachronic perspective is that the latter meanings are absent from Homeric Greek.

(1) τὴν δ᾽ **εὗρ**᾽ ἐν μεγάρῳ[2] (*Il.* 3. 125)
     "She found her in the hall."[3]

(2) καὶ **ηὗρον** ἐπισκοπῶν πάνυ οἰκείως ταῦτα γιγνόμενα. (X. *Oec.* 2. 17. 4)
     "And on observation I found out that this happens quite naturally."

(3) κοὐκέτ᾽ ἄν μ᾽ **εὕροις** δικαστὴν δριμὺν οὐδὲ δύσκολον, (Ar. *Pax* 348)
     "You'd no longer find me a severe and colicky juror." (transl. Henderson)

In addition to different semantic nuances, the examples above also display different complementation structures: (1) a direct object complement in the accusative case, (2) a complement in the form of an accusative-and-participle construction (henceforth ACP) and (3) a direct object and a predicative expression made up of two separate noun phrases (henceforth NPs).[4] Ancient Greek possessed various linguistic means, called complementation structures, to connect a complement, a syntactically necessary (clausal) argument, to a verb.[5] In general linguistics, research on complementation has focused on solving what is known as the matching-problem.[6] This problem refers to the fact that complement-taking predicates can take more than one type of complementation structure, but the motivational principles behind the choice of complementation structure are far from clear. Although this term is not used in the literature on Ancient Greek complementation, it is suggested on various occasions that the motivational principles behind the choice of *different* complementation structures for the *same* complement-taking verb need further research.[7] For example, Faure asserts: "But though attractive, a one-to-one explanation between a semantic class of verbs and a clause-type is challenged by the fact that certain predicates accept several types of clauses. This would suggest either that some types of clauses are synonymous or that certain conditions enable them to be embedded by the same verb."[8]

Ancient Greek εὑρίσκω poses similar problems because of its various possible complementation structures above. Also, the complementation structure of example 3 for εὑρίσκω has not been treated in the grammars and literature thus far and therefore deserves further attention.[9] This paper will try to argue that diachrony can explain the various uses with

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[1] For French and Italian, see Schneider 2007. For Dutch, see Nuyts 2001, 241. For English, see Brinton 2008, 230–239 and D'hoedt and Cuyckens 2017, 115‑146.

[2] For the Ancient Greek text, I used the texts available through the latest version of the Thesaurus Linguae Graecae.

[3] If not mentioned otherwise, the translations are my own.

[4] See van Emde Boas et al. 2019, 363.

[5] For helpful overviews of complementation structures in Ancient Greek see Jacquinod 1999, Rijksbaron 2006 and van Emde Boas et al. 2019.

[6] See Noonan 2007; De Smet 2013, 19 and applied to Ancient Greek (without explicitly referring to it as such) Faure 2013.

[7] Huitink, 2009, 22; Faure 2013; Cristofaro 2008.

[8] Faure 2013, 174.

[9] Instead, mention has been made of the use of εὑρίσκω with an infinitive, Smyth 1984, 474–476.

different complementation structures that one predicate, in our case εὑρίσκω, can take. Furthermore, the paper will argue that complaints from our standard grammars[10] that different meanings of εὑρίσκω are difficult to keep apart can be dealt with in two ways: (1) keeping in mind that εὑρίσκω's diachronically related meanings correlate with change in constructional possibilities[11] and (2) paying attention to linguistic characteristics such as predicate type, semantic role of the subject and concomitant semantic features, factivity, syntactic pattern and usage context.

Getting closer to a solution of the matching-problem in Ancient Greek complementation also connects to another issue in the literature: there is a focus on systematic meaningful complementation structure oppositions and their diachronic change. The majority of those who analyse the meaning of Ancient Greek complementation choose to analyse types of complementation contrastively, e. g. the difference between participial and infinitival complementation.[12] Thus, for Classical Greek this opposition is often said to be one of factivity for participial complements versus non-factivity for infinitival complements[13] whereas Post-Classical Greek breaks down this system.[14] What such opposition approaches might overlook, as I will argue, is the role of diachronic change in specific complement-taking predicates and their complementation structure possibilities. For example, this opposition cannot always be maintained, as we find examples of non-factive εὑρίσκω with a participial complement which reveal the stage before εὑρίσκω becomes non-factively used with the infinitive or two NPs. Similarly, it has been suggested that the complementation structures available in Homeric Greek as opposed to later Classical Greek are almost completely similar.[15] While this could in theory be true, I think that we should not forget that the complement-taking verbs can change in meaning themselves and, possibly as a result, have different constructional possibilities. This way, even if the *types* of complementation structures in the complementation inventory supposedly have stayed the same for Homeric and Classical Greek[16], the semantic and constructional change of *specific* complement-taking verbs results in a rearrangement of the complementation inventory. In fact, the semantic and constructional changes which we find with εὑρίσκω seem to have parallels in other cognitive predicates (ἐπίσταμαι, γιγνώσκω and οἶδα), which suggests that these complement taking verbs follow similar pathways of change (see section 4).

Thus, the current paper aims to demonstrate that the semantic and constructional development of εὑρίσκω[17] from Homeric to Post-Classical Greek provides evidence towards a diachronic solution of the matching-problem in Ancient Greek complementation.

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[10] See Goodwin 1889, 350.

[11] Importantly, the approach of this paper has affinity with the constructional approach to complementation by Cristofaro 2008. She too emphasizes that both the value of the complement taking predicate and the complementation structure should be taken into account, albeit argued in a different way. Other diachronic approaches to the Ancient Greek complementation system are Bentein 2017 and 2018.

[12] E. g. Cristofaro 1996, Huitink 2009 and Faure 2013.

[13] See Rijksbaron 2006, 50–55 and van Emde Boas et al. 2019, 617–619. This observation was developed by Cristofaro 1995 and 1996.

[14] See Bentein 2017.

[15] Faure 2013, 172 but see 178 for some important differences.

[16] This is clearly not the case for Post-Classical Greek, because Post-Classical Greek saw a restructuring of the complementation system, Horrocks 2007, 620–621 and Bentein 2017.

[17] I confined my analysis to active forms of εὑρίσκω. Therefore I will not discuss passive aorists such as *Ar.* Pax 372 or medial forms of εὑρίσκω such as *Od.* 21.304, the former meaning 'were found' and the latter 'find for oneself/obtain', where the subject is beneficiary of the find.

In doing so, this paper will focus on semantic and constructional factors.[18] The paper is structured as follows: section 2 consists of a diachronic lexical examination of εὑρίσκω from Homeric to Post-classical Greek, every period having its own subsection; section 3 deals with the different stages of constructional change that εὑρίσκω has gone through; section 4 widens the scope of investigation to other complement-taking verbs pointing out parallel developments; section 5 concludes the article. The corpus of investigation consisted of Homer, Herodotus, Aristophanes, Euripides, Xenophon, Isocrates, Demosthenes, the Septuagint, Dionysius of Halicarnassus, the New Testament, and Epictetus.

2. The evolution of εὑρίσκω

2a. Homeric Greek: (non-)physical finding

In Homeric Greek, εὑρίσκω refers to finding things or people (example 1, occurring 50 times), the latter of which are more often found in a non-dynamic activity such as standing or sitting (occurring 31 times, as in example 4) than a dynamic activity such as running. Note that the participial clause found with the object complement is syntactically irrelevant, as leaving it out would not alter the sense of the necessary arguments.[19]

(4) **εὗρεν** δ᾽ εὐρύοπα Κρονίδην ἄτερ ἥμενον ἄλλων (*Il.* 1. 498.)

"There she found the son of Cronos (…), as he sat apart from the rest"

The semantic role belonging to this meaning type, type 1, is agent, since the subject is physically involved in the search which leads to the find. However, the agent is not a prototypical agent, because it does not have control over the state of affairs and does not volitionally effect a change in its object. The prototypical agent is "a person who *volitionally* initiates *physical activity* resulting, through physical contact in the transfer of energy to an external object" (my italics).[20]

Furthermore, the find does not need to be the result of an intentional search, but in Homeric Greek refers both to the result of an intentional search (as in example 5) and unintentionally coming across something (as in example 6).[21]

(5) **εὗρε** Λυκάονος υἱὸν ἀμύμονά τε κρατερόν τε ἑσταότ᾽ (*Il.* 4. 89‒90.)

"She found the noble and mighty son of Lycaon standing there."

In the example above Athena finds Pandarus after intentionally searching for him: "hoping to find him somewhere" (διζημένη εἴ που ἐφεύροι *Il.* 4.88). By contrast, in example 6 Odysseus of course will not embark on an intentional search for misery in his own home, but would come across it unintentionally.

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[18] De Smet 2013, 20–33 lists other factors which might be relevant but are left out for reasons of space: the horror aequi principle, the cognitive complexity principle, social and regional stratification, register and information structure. For the role of information-structure, see Huitink 2009, 21–40 and Goldstein 2016, 221–289. For the relation between perception predicates and aspect in Ancient Greek, see Mendez Dosuna 2017, 67–69.

[19] Rijksbaron 2006, 117 refers to such participial clauses as satellite clauses.

[20] Langacker 1991, 285.

[21] Note that some languages seem to use different words for this distinction, 'find' versus 'come across' (English) or 'vinden' versus 'aantreffen' (Dutch). Also, Allan 2003 suggests that middle verbs of perception (e. g. σκέπτομαι "look at") tend to express volitional activities.

(6) ὀψὲ κακῶς ἔλθοι, ὀλέσας ἄπο πάντας ἑταίρους, νηὸς ἐπ᾽ ἀλλοτρίης, **εὕροι** δ᾽ ἐν πήματα οἴκῳ. (*Od*. 9. 534–535)

"late may he come, and in distress, after losing all his comrades, in a ship that is another's; and may he find trouble in his house." (transl. Murray)

Only 4 times in Homeric Greek someone does not find a specific person or thing but finds something outside the physical world such as a solution (example 7).[22] These examples foreshadow the upcoming semantic development toward a predicate of mental perception 'find out'.

(7) αὔτως γὰρ ἐπέεσσ᾽ ἐριδαίνομεν, οὐδέ τι μῆχος **εὑρέμεναι** δυνάμεσθα, πολὺν χρόνον ἐνθάδ᾽ ἐόντες. (*Il*. 2. 342–343)

"For we are vainly wrangling with words, and we can find no solution at all, though we have been here a long time."

2b. Classical Greek: mental perception and mental judgment finding

In Classical Greek, two new functions are acquired: εὑρίσκω as a predicate of mental perception (type 2)[23] and of mental judgment (type 3). Mental perception εὑρίσκω refers to a mental process of discovering a fact that was unknown to the subject thus far[24], as in the following example:

(8) ὅσαι δ᾽ ἐν ἀνθρώποις ἀρεταὶ λέγονται, σκοπούμενος **εὑρήσεις** πάσας μαθήσει τε καὶ μελέτῃ αὐξανομένας (X. *Mem*. 2. 6. 39)

"You will find out on observation that every kind of excellence that people recognize is enhanced by study and practice."

The participle σκοπούμενος, a perception predicate[25], signals that the finding out is a mental process which Critoboulos will have to go through to discover something new. In other words, the physical search of type 1 has in type 2 been metaphorically replaced by a mental search. The semantic role of the subject is experiencer, as the subject is a sentient entity which is cognitively involved in the process of mental perception.[26]

The participial clause that follows mental perception εὑρίσκω is factive, meaning that the contents of the participial clause is presented as a presupposed fact.[27] Thus, a fact is perceived that is already presupposed to have existed independent of the perception of it. In example 8 the fact that every kind of recognized excellence is enhanced by study and practice is presupposed as given knowledge. In the next example the fact that the Lacedaemonians and Athenians were the most powerful tribes among the Greeks is similarly presupposed to be true, as indeed they were.

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[22] Other examples are *Il*. 9.250; 16. 472; *Od*. 9. 422.

[23] Rijksbaron 2006, 117.

[24] This meaning is expressed by so-called particle verbs in the Germanic languages: 'find out' (English); 'herausfinden' (German) and 'uitvinden' (Dutch). Note, however, that Classical Greek also had the option of using ἐξευρίσκω for 'find out', but its differences with εὑρίσκω are yet to be established.

[25] See Allan 2003, 95.

[26] See the definition of experiencer by Langacker 1991, 285 as an animate entity engaged in a mental activity.

[27] Rijksbaron 2006, 117.

(9) ἱστορέων δὲ **εὕρισκε** Λακεδαιμονίους τε καὶ Ἀθηναίους προέχοντας, τοὺς μὲν τοῦ Δω-
ρικοῦ γένεος, τοὺς δὲ τοῦ Ἰωνικοῦ. (*Hdt.* 1. 56. 2)

"He found by inquiry that the chief peoples were the Lacedaemonians among those of
Doric and the Athenians among those of Ionic stock." (transl. Godley)

Furthermore, mental perception εὑρίσκω can also refer to inventions, something
which other languages prefer to use separate verbs for.[28]

(10) Ἴακχε πολυτίμητε, μέλος ἑορτῆς ἥδιστον **εὑρών**. (Ar. *Ra* 398–399)

"Exalted Iachus, inventor of most enjoyable festive song." (transl. Henderson)

Now, in contrast to mental perception εὑρίσκω, mental judgment εὑρίσκω (type 3) is
a mental state predicate. Mental judgment εὑρίσκω refers to the mental judgment of the
experiencer subject which resulted from previous mental perception or other (often textu-
ally unexpressed) evidence. As such the mental judgment is non-factive, because it con-
cerns the subjective judgment of the subject.[29] The syntactic pattern of mental judgment
εὑρίσκω is either an accusative-plus-infinitive construction (henceforth ACI) or an ac-
cusative complement with an obligatory (evaluative) adjunct complement, a construction
which has thus far not been explained in the literature on Ancient Greek.[30] What type
2 and 3 have in common, however, is that they are expressed with subjects which have
the semantic role of experiencer. The next example shows non-factive mental judgment
εὑρίσκω in combination with an ACI construction[31], a combination which occurs less
often than mental perception εὑρίσκω.[32]

(11) Ταῦτα μὲν ἐπὶ τοσοῦτο ἐλέγετο, μετὰ δὲ εὐφρόνη τε ἐγίνετο καὶ Ξέρξην ἔκνιζε
ἡ Ἀρταβάνου γνώμη· νυκτὶ δὲ βουλὴν διδοὺς πάγχυ **εὕρισκέ** οἱ οὐ πρῆγμα εἶναι
στρατεύεσθαι ἐπὶ τὴν Ἑλλάδα. (*Hdt.* 7. 12. 1–3)

"The discussion went that far; then night came, and Xerxes was pricked by the advice of
Artabanus. Thinking it over at night, he saw clearly that to send an army against Hellas
was not his affair." (transl. Godley)

Please note that Godley's translation is misleading in the sense that εὕρισκέ could be
interpreted as a factive verb of mental perception with this translation, which it clearly is

[28] Compare the following alternatives with those in note 24: 'invent' (English, based on Latin 'invenire'
which means 'to find'), 'ontdekken' (Dutch) and 'entdecken' (German). But note that in Dutch 'uitvinden'
can also be used for inventing. Furthermore, Ancient Greek also had the alternative of using ἐξευρίσκω for
both 'find out' and 'invent'.

[29] Seeing how the semantics of εὑρίσκω became more subjective over time, one may be tempted
to attribute these changes to the process of semantic change called subjectification: the process whereby
"meanings become increasingly based in the speaker's subjective belief state/attitude toward the proposi-
tion", Traugott 1989, 35. However, since the mental judgment here still belongs to the subject of the sentence
and therefore only falls together with the speaker's judgment in first person use (e.g. example 14), I think
that this matter is better left out of consideration here. For more convincing cases of subjectification, see
Allan 2017 on future expressions.

[30] However, in the generative linguistic literature these types of clauses are well studied as so-called
'small clauses', which for generative and formal linguists are interesting for their lesser clausal properties, see
Aarts 1992 and Cardinaletti and Guasti 1995.

[31] For the one rare occurrence where εὑρίσκω seems to combined with ὅτι and why it is not, see James
2001–2005, 163-166.

[32] The only examples that I found besides the one mentioned above are: *Hdt.* 1. 79. 1 and Pl. *Leg.* 699b.
Note that Goldstein 2016, 283–285 rightly suggested the semantic complexities of εὑρίσκω's complementa-
tion as an important further research topic.

not as it refers to Xerxes' opinion. The sense can be captured better in the following literal translation: he considered sending an army against Hellas to not be an affair that belongs to hím (εὕρισκέ οἱ οὐ πρῆγμα εἶναι στρατεύεσθαι ἐπὶ τὴν Ἑλλάδα). As highlighted in the order of my translation, the subject of the ACI construction actually is the second infinitive construction. The dative is one of possession and completes the sense of the infinitive of the ACI construction. In the next example, the translation by Godley is again rather free, but now rightly points to speaker's subjective mental state. In a more literal fashion one could translate: upon reflection I consider no man but you to be as devoted to me and my affairs.

> (12) Ἱστιαῖε, βασιλεὺς Δαρεῖος τάδε λέγει· ἐγὼ φροντίζων **εὑρίσκω** ἐμοί τε καὶ τοῖσι ἐμοῖσι πρήγμασι εἶναι οὐδένα σεῦ ἄνδρα εὐνοέστερον, τοῦτο δὲ οὐ λόγοισι ἀλλ᾽ ἔργοισι οἶδα μαθών. (*Hdt.* 5. 24. 1)
>
> "Histiaeus, these are the words of Darius the king: my thoughts can show me no man whois more devoted to me and my affairs. Not words but deeds have proven this to me." (transl. Godley)

In example 13 (= example 3 above) εὑρίσκω refers to the evaluation by the second person subject, the addressee, based on unexpressed earlier evidence.

> (13) κοὐκέτ᾽ ἄν μ᾽ **εὕροις** δικαστὴν δριμὺν οὐδὲ δύσκολον, (Ar. *Pax* 348)
>
> "You'd no longer find me a severe and colicky juror." (transl. Henderson)

The subjectivity of the mental judgment is signalled by the evaluative adjectives or noun phrases with which the subject characterizes the first complement and resembles verbs such as Classical Greek νομίζω 'deem/consider' that take two complements in the accusative. In example 14, Coës, the general of the Mytilineaeans, makes sure to emphasize to Darius that his advice is what he personally considers best for Darius (τὴν εὕρισκον ἀρίστην σοί, βασιλεῦ, ἐς μέσον φέρω). The reason for this is that he wants to convince Darius using his expert opinion (γνώμην) to preserve the bridge in order to use it as an exit later on and he succeeds in convincing him.

> (14) καὶ τάδε λέγειν φαίη τις ἄν με ἐμεωυτοῦ εἵνεκεν, ὡς καταμένω· ἐγὼ δὲ γνώμην μὲν τὴν **εὕρισκον** ἀρίστην σοί, βασιλεῦ, ἐς μέσον φέρω, αὐτὸς μέντοι ἕψομαί τοι καὶ οὐκ ἂν λειφθείην. (*Hdt.* 4. 97. 5)
>
> "Now it may perhaps be said that I say this for my own sake, because I want to remain behind; but it is not so; I only declare publicly the opinion that I think best for you, and I will follow you and do not want to be left here." (transl. Godley)

In example 15, the fact that the legislator (=the subject) personally evaluates the justifiability of the nature of the act, not those involved, is used as support by the speaker for the legislator's unbiased approach. The portrayal of the legislator by Demosthenes as unbiased is essential for the vindication of Demosthenes' politically active opponent Meidias.

> (15) οὐ γὰρ ὅστις ὁ πάσχων ᾤετο δεῖν σκοπεῖν, ἀλλὰ τὸ πρᾶγμ᾽ ὁποῖόν τι τὸ γιγνόμενον· ἐπειδὴ δ᾽**εὗρεν** οὐκ ἐπιτήδειον, μήτε πρὸς δοῦλον μήθ᾽ ὅλως ἐξεῖναι πράττειν ἐπέτρεψεν (Dem. 21. 46)

"He thought that he ought to look, not at the rank of the sufferer, but at the nature of the act, and when he found the act unjustifiable, he would not give it his sanction either i regard to a slave or in any other case." (transl. Murray)

2c. Post-Classical Greek: find out how to/be able

In Post-Classical Greek, the extended polysemy of εὑρίσκω from Classical Greek persists, as witnessed by the next two examples of mental perception and mental judgment εὑρίσκω.

(16) **εὗρον** δὲ τὸν λίθον ἀποκεκυλισμένον ἀπὸ τοῦ μνημείου (*Ev.Luk.* 24. 2)

"They found out that the rock had been rolled away from the tomb."

(17) ὅ τι μὲν ἂν τῶν ποιημάτων ὅμοιον **εὑρίσκω** τῷ φλυάρῳ καὶ ἀδολέσχῃ, γέλωτος ἄξιον τίθεμαι (D. H. *Comp.* 26. 45–46)

"Whatever poetry I find resembling this garrulous nonsense, I deem as worthy only of ridicule."

Based on our knowledge of the development of English parenthetical I find (cf. example 18), we might expect to find parenthetical εὑρίσκω, but no such examples exist.

(18) A useful technique with steps, I find, is to apply a thin line of paint under the ridges of the steps (1991 *The Artist's and Illustrator's Magazine* [BNC]).[33]

We do, however, find one puzzling example in the New Testament which has led to alteration of the text in order to accommodate an easier interpretation.

(19) εἰ δὲ ὃ οὐ θέλω [ἐγὼ] τοῦτο ποιῶ, οὐκέτι ἐγὼ κατεργάζομαι αὐτὸ ἀλλ᾽ ἡ οἰκοῦσα ἐν ἐμοὶ ἁμαρτία. **εὑρίσκω** ἄρα τὸν νόμον, τῷ θέλοντι ἐμοὶ ποιεῖν τὸ καλόν, ὅτι ἐμοὶ τὸ κακὸν παράκειται (*Ep. Rom.* 7. 20–21)

"If I do what I do not want, it is no longer I that do it, but sin which is present in me. Therefore, I consider it law to me to do right, for I want to, because evil is present in me."

James (with others) suggests with respect to this example that it is an ACI construction with an εἶναι to be supplied. However, I think that the example does not need it, because it can be read as a double complement construction of mental judgment εὑρίσκω, where 'for me wanting to do right'(τῷ θέλοντι ἐμοὶ ποιεῖν τὸ καλόν) is the first accusative complement and 'the law' (τὸν νόμον) is the second. The argument structure could then be translated as 'I consider wanting to do right the law', which is complete in sense and matches earlier examples discussed above.

Last of all I would like to mention one new evolution in Post-Classical Greek which is εὑρίσκω meaning 'to be able to.'[34]

(20) περὶ δὲ τὴν χρῆσιν αὐτῶν τὴν προσήκουσαν τελέως ἀγύμναστοί ἐσμεν. δὸς γοῦν ᾧ θέλεις ἡμῶν ἰδιώτην τινὰ τὸν προσδιαλεγόμενον· καὶ οὐχ **εὑρίσκει** χρήσασθαι αὐτῷ (*Epict.* 2. 12. 1–2)

"With regards to the use of that knowledge we are too untrained. Let one of us converse with a layman: he is not able to use it."

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[33] This example has been taken from Brinton 2008, 234.
[34] James 2001–2005, 158.

The semantic role for this meaning type is probably best described as a non-proto-typical experiencer, because the subject is not properly involved cognitively, but rather has the mental experience to carry out an action. The source for this evolution is more likely to be type 2 'find out', since the result of 'find out how to' implies the ability to know how and therefore can easily evolve into meaning 'being able to'. Although I could not find contexts for this evolution, there is both Ancient Greek evidence (ἐπίσταμαι and οἶδα as 'know' and 'be able to') and cross-linguistic evidence that knowledge verbs can evolve into verbs of ability. Most famously, English 'can' already in Old English evolved from 'know' to 'know how to/be able', as did French 'savoir' 'know to/be able'.

Summarizing, the semantic development of εὑρίσκω can be graphically represented as in table 1:

Table 1. **Semantic development of εὑρίσκω**

Meaning type	Semantic role	Predicate type	Factivity
(1) find	Non-prototypical agent (+/-volitional & +/-physical find)	Sensory perception	Factive perception
(2) find out	Experiencer	Mental perception	Factive perception
(3) find/consider	Experiencer	Mental state	Non-factive judgment
(4) be able to	Non-prototypical experiencer (but less cognitively involved)	Mental state	—

3. Constructional variation and change

This section zooms in on the constructional history of Ancient Greek εὑρίσκω. I discuss some examples where the context is needed to determine the value of the constructions, either because the complement is absent or is misleading in terms of factivity, and detail the mechanics of constructional change between the different functions of εὑρίσκω.

As discussed above, mental perception εὑρίσκω typically has a syntactically obligatory participial construction, an ACP. Nevertheless, mental perception εὑρίσκω is also found *without* an obligatory participle in Herodotus in explanatory clauses revealing his analytic method.[35] The reason for the absence of a complement is very likely to be the comparative clause, as complements are easily left to be inferred in comparative clauses.[36]

(21) Μέχρι μέν νυν τούτου τοῦ χώρου καὶ Θερμοπυλέων ἀπαθής τε κακῶν ἦν ὁ στρατός, καὶ πλῆθος ἦν τηνικαῦτα ἔτι, ὡς ἐγὼ συμβαλλόμενος **εὑρίσκω** (*Hdt.* 7. 184. 1–3)

"Until the whole host reached this place and Thermopylae it suffered no hurt; and the numbers were still of such size, as I find out trough calculation."

This observation of constructional variation is important, because our grammars will not mention these differences in their attempts to classify and describe formal structures and their semantic oppositions, such as the verbs which go with participles as opposed to the infinitive.

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[35] See also *Hdt.* 3. 41. 1; 5. 57. 1; 7. 187. 2; 7. 239. 4.
[36] I thank a reviewer for this suggestion.

In a similar vein, mental judgment εὑρίσκω occurs without the second complement in contexts where the evaluation of the second complement is expressed in the previous part of the sentence. In example 22 εὕρισκε τόδε means that he found this the most grieving to his soul to lose, which is expressed in the preceding clause.

(22) ταῦτα ἐπιλεξάμενος ὁ Πολυκράτης καὶ νόῳ λαβὼν ὥς οἱ εὖ ὑπετίθετο ὁ Ἄμασις, ἐδίζητο ἐπ᾽ ᾧ ἂν μάλιστα τὴν ψυχὴν ἀσηθείη ἀπολομένῳ τῶν κειμηλίων, διζήμενος δ᾽ **εὕρισκε** τόδε· (*Hdt.* 3. 41. 3)

"Reading this, and perceiving that Amasis' advice was good, Polycrates considered which of his treasures it would most grieve his soul to lose, and concluded the following."

In the next example the evaluation by εὑρίσκω precedes its use in a comparative clause. Here it is readily understood that the devised πρῆγμα is considered exceptionally foolish (εὐηθέστατον) by Herodotus himself.

(23) ἐνδεξαμένου δὲ τὸν λόγον καὶ ὁμολογήσαντος ἐπὶ τούτοισι Πεισιστράτου μηχανῶνται δὴ ἐπὶ τῇ κατόδῳ πρῆγμα εὐηθέστατον, ὡς ἐγὼ **εὑρίσκω**, μακρῷ, ἐπεί γε ἀπεκρίθη ἐκ παλαιτέρου τοῦ βαρβάρου ἔθνεος τὸ Ἑλληνικὸν ἐὸν καὶ δεξιώτερον καὶ εὐηθίης ἠλιθίου ἀπηλλαγμένον μᾶλλον· (*Hdt.* 1. 60. 3)

"This offer being accepted by Pisistratus, who agreed on these terms with Megacles, they devised a plan to bring Pisistratus back which, to my mind, was so exceptionally foolish that it is strange (since from old times the Hellenic stock has always been distinguished from foreign by its greater cleverness and its freedom from silly foolishness)." (transl. Godley)

Thus, in these examples one needs to infer the meaning of εὑρίσκω from the context instead of simply relying on a complementation structure.

Let us move on to the changes that have led to the different complementation structures of εὑρίσκω, as represented in table 2 below. In what follows I attempt to explain how those constructional possibilities that are in italics have come about.

Table 2. **Constructional change of εὑρίσκω**

Meaning type	*Verb class*	*Complementation structure*
(1) find	Sensory perception	+ NP complement
		+ NP complement and syntactically irrelevant participle
(2) find out	Mental perception	+ NP complement or without (but inferred from context)
		+ *ACP*
(3) find/consider	Mental state	+ *ACI*
		+ *double complement*
(4) be able to	Mental state	+ obligatory infinitive

The factive ACP construction is likely the result of a reanalysis of an attribute of an object of sensory perception (expressed in a syntactically irrelevant participle), into a mental perception of something which was unknown. Reanalysis concerns a reinterpretation of meaning, as "the hearer understands a form to have a structure and a meaning that

are different from those of the speaker".[37] The closest Homeric examples to this evolution would be those discussed above where someone finds a solution, since finding a solution also asks for cognitive involvement, i.e. an experiencer subject. Traces of this reanalysis can be found in Herodotus where we not just find the two meanings close to each other in the same work, but even find an example of factive εὑρίσκω with an unnecessary participial complement. The first example shows the new meaning of εὑρίσκω where the participial complement is reanalysed as a mental perception, whereas the participial complement of the second example is still syntactically irrelevant.

> (24) **εὗρον** δὲ οὐδὲ τούτους τοῖσιἝλλησι συμφερομένους: ἔφασαν γὰρ ἅμα Τύρῳ οἰκιζομένῃ καὶ τὸ ἱρὸν τοῦ θεοῦ ἱδρυθῆναι, εἶναι δὲ ἔτεα ἀπ᾽ οὗ Τύρον οἰκέουσι τριηκόσια καὶ δισχίλια. εἶδον δὲ ἐν τῇ Τύρῳ καὶ ἄλλο ἱρὸν Ἡρακλέος ἐπωνυμίην ἔχοντος Θασίου εἶναι: ἀπικόμην δὲ καὶ ἐς Θάσον, ἐν τῇ **εὗρον** ἱρὸν Ἡρακλέος ὑπὸ Φοινίκων **ἱδρυμένον**, οἳ κατ᾽ Εὐρώπης ζήτησιν ἐκπλώσαντες Θάσον ἔκτισαν (*Hdt*. 2. 44. 3-4).

> "I **found** that their account did not tally with the belief of the Greeks, either; for they said that the temple of the god was founded when Tyre first became a city, and that was two thousand three hundred years ago. At Tyre I saw yet another temple of the so-called Thasian Heracles. Then I went to Thasos, too, where **I found a temple** of Heracles **built** by the Phoenicians, who made a settlement there when they voyaged in search of Europe." (transl. Godley)

A comparable constructional reanalysis has taken place in the change of lexical ὀφείλω 'owe a debt' with a syntactically irrelevant final-consecutive infinitive (instead of a accusative participle) to a deontic modal 'had to/be obliged to' with syntactically necessary infinitive: 'owe a debt to pay back' evolving into 'I had to pay back a debt'.[38] In English one could compare the change from possessional 'have' with a syntactically irrelevant explanatory infinitive in 'I have a party to go to' as opposed to later deontic 'have' in 'I have to go to a party' where the infinitive is a complement.[39]

The development of the εὑρίσκω ACI construction, in my opinion, consisted of several steps of change. First of all, "There is a conceptual link between the sensory perception of a state of affairs and knowledge that a state of affairs is the case, insofar as a process of sensory perception implies that the perceiver acquires knowledge about the perceived state of affairs."[40] Thus, saying to have perceived something gives rise to the implicature of having knowledge of something, an implicature which may semanticize. The most well-known example of this development is Ancient Greek οἶδα 'know' which originated from 'I have seen', as the verb goes back to the same root as from εἶδον 'see/perceive', *weid*.[41] Second, I found several examples of εὑρίσκω which provide explicit testimony to the reanalysis of mental perception εὑρίσκω into mental judgment εὑρίσκω *before* the surface structure of the ACP has even changed to the accusative plus infinitive or double complement. Such examples fit what we know from grammaticalization studies, as reanalysis "is covert until some recognizable modification in the form reveals it" and first concerns change in semantics "but not at first change in form".[42] Such examples constitute so-called

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[37] Hopper and Traugott 2003, 50.
[38] Ruiz Yamuza 2008, 57 and Allan 2013, 13.
[39] See Hopper and Traugott 2003, 52–55 who discuss this reanalysis for Latin habeo 'have' to 'have to'.
[40] Cristofaro 2012, 344.
[41] Rix et al. 2001, 665–668.
[42] Hopper and Traugott 2003, 50.

bridging contexts, contexts in which a new target meaning provides a more likely interpretation of the marker than the older source meaning[43], and demonstrate that the semantic change has taken place before the constructional change. Below I will discuss two examples of such bridging contexts.[44]

(25) ὁ δὲ Πέρσῃ διδοῖ τῷ οὔνομα ἦν Καμβύσης, τὸν **εὕρισκε** οἰκίης μὲν **ἐόντα** ἀγαθῆς τρόπου δὲ ἡσυχίου, πολλῷ ἔνερθε ἄγων αὐτὸν μέσου ἀνδρὸς Μήδου (*Hdt.* 1. 107. 2)

"He wedded her to a Persian called Cambyses, a man whom he knew to be well born and of a quiet temper: for Astyages held Cambyses to be much lower than a Mede of middle estate." (transl. Godley)[45]

(26) φροντίσας τὸ ἂν **εὕρῃς ἐόν** τοι πλείστου ἄξιον καὶ ἐπ' ᾧ σὺ ἀπολομένῳ μάλιστα τὴν ψυχὴν ἀλγήσεις, τοῦτο ἀπόβαλε οὕτω ὅκως μηκέτι ἥξει ἐς ἀνθρώπους. (*Hdt.* 3. 40. 4)

"Consider what you deem most precious and what you will most grieve to lose, and cast it away so that it shall never again be seen among men." (transl. Godley)

In example 25 the imperfect εὕρισκε refers to Astyages' judgment of the Persian Cambyses as fitting for Mandane rather than the preceding evidence and process of finding out whether he was. In sum, the source meaning of finding out something new (type 2) thus has traded place for a new mental judgment meaning referring to the resulting judgment (type 3). In evolutionary terms, the implicature of the resulting mental state from previous mental perception has semanticized. Example 26 is found in the famous letter from Amasis to the very successful Polycrates. Amasis advises Polycrates to get rid of what he values most in order to change his fate, because Amasis is certain that too much success will invoke retribution from the gods. The εὕρῃς here refers to mental judgment by Polycrates, in particular his personal evaluation of what is most important (ἄξιον) to him (see the dative τοι). Thus, although the construction here would suggest a mental perception of discovery, the context shows that it expresses a mental judgment (cf. φροντίσας 'consider').[46]

These examples question the alleged factivity of the participle in such examples. One might, in a conservative way, still want to argue that these participles present their content as an independent fact, since it is generally claimed that the opposition between the ACP the ACI is one of factivity. However, such an explanation would conflict with their value and usage context in the examples above, since it is clear in the examples that εὑρίσκω refers to the subjective mental judgment by the subject. In other words, the use is non-factive as νομίζω in the ACI construction νομίζει σε ταῦτα ποιῆσαι "he thinks that you did that".[47] Therefore, I propose that we see these bridging contexts not only as bridging contexts in a semantic sense, but also in a structural sense. The structural properties of the complementation structure of type 2 εὑρίσκω 'find out', the source construction, have not bleached away yet, but are preceded by the semantic evolution. As a result, these combinations of εὑρίσκω with the participle are non-factive, as the ACI construction with verbs of

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[43] See esp. Heine 2002, 83–101.

[44] Other examples are *Hdt.* 7. 8. 2; 7. 10. 2; 7. 15. 3.

[45] However, Godley combines this main clause with the former with 'but', whereas I changed it in the translation to a main clause.

[46] A reviewer suggested that examples where the discrepancy between what the person thinks and what is the case (*X thinks so, but not*) would prove my point further. I fully agree, but sadly could not find such examples.

[47] I owe this fictitious example to Bentein 2017, 4.

thinking is said to be. Thereby these examples demonstrate that the opposition of factivity in Classical Greek complementation patterns can be broken when bridging contexts are concerned.

Furthermore, mental judgment εὑρίσκω will have altered its constructional surface structure only after the reanalysis of the ACP constructions, through analogy with verbs such as νομίζω 'believe' in their combination with an ACI construction, as in example 27 and 28.

(27) Ταῦτα μὲν ἐπὶ τοσοῦτο ἐλέγετο, μετὰ δὲ εὐφρόνη τε ἐγίνετο καὶ Ξέρξην ἔκνιζε ἡ Ἀρτα-βάνου γνώμη· νυκτὶ δὲ βουλὴν διδοὺς πάγχυ **εὕρισκέ** οἱ οὐ πρῆγμα εἶναι στρατεύεσθαι ἐπὶ τὴν Ἑλλάδα. (*Hdt.* 7. 12. 1–3)

"The discussion went that far; then night came, and Xerxes was pricked by the advice of Artabanus. Thinking it over at night, he saw clearly that to send an army against Hellas was not his affair." (transl. Godley)

(28) Πέρσαι γὰρ θεὸν **νομίζουσι** εἶναι πῦρ (*Hdt.* 3. 16. 2)

"The Persians believe that fire is a god."

The verb νομίζω 'believe' probably has provided the constructional analogy for the double complement mental judgment εὑρίσκω, since νομίζω 'consider as' also occurs with a double complement.[48] Thus in example 29 of double complement mental judgment εὑρίσκω the infinitive of being is no longer there.

(29) Κροῖσος μὲν δὴ ταῦτά οἱ ὑπετίθετο, αἱρετώτερα ταῦτα **εὑρίσκων** Λυδοῖσι ἢ ἀνδραπο-δισθέντας πρηθῆναι σφέας (*Hdt.* 1. 156. 1)

"Croesus proposed this to him, because he thought this was better for the Lydians than to be sold as slaves." (transl. Godley)

Besides these arguments, there are several other types of evidence which support the sequence of semantic reanalysis through a bridging context followed by structural analogy. First of all, research into other types of complementation has also yielded the insight that semantic change precedes structural change in complementation. In Post-Classical Greek, the infinitive declined, a phenomenon for which various explanations have been proposed. Most recently, Bentein has proposed that the semantic changes leading to temporal and 'modal' ambiguity are essential reasons for this structural decline.[49] Second, it is well-known from grammaticalization research that the evolution of a verb category entails that it first goes through semantic reanalysis before its constructional patterns change through analogy.[50] This sequence explains why the source construction of mental perception εὑρίσκω+ACP, which is generally selected in Classical Greek for factive information, has not bleached away, because only the reanalysis has taken place, not the change of constructional patterns through analogy. For Ancient Greek, such a phenomenon has, for example, been observed for the evolution of counterfactual ὤφελ(λ)ον which first comes to express a counterfactual wish as a lexical verb with an infinitive and subsequently turns into a particle which modifies a past indicative, a constructional type which is said to have evolved through analogy with the particles εἴθε and εἰ γάρ in Ancient Greek wishes.[51]

The constructional changes of εὑρίσκω can be summarized as follows:

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[48] See, for example, Pl. *Smp.* 202d.
[49] Bentein 2018.
[50] Hopper and Traugott 2003, 68–69.
[51] See Revuelta Puigdollers 2017, 37–43.

Table 3. **Processes of constructional change of εὑρίσκω**

Meaning type	Verb class	Complementation structure
(1) find	Sensory perception	+ NP complement
		+ NP complement and syntactically irrelevant participle
(2) find out	Mental perception	+ NP complement or without (but mentioned in preceding)
		+ ACP construction *Through reanalysis*
(3) find/deem	Mental state	+ACI *Through reanalysis followed by analogy*
		+ two complements *Through analogy*
		+ double complement but 2nd mentioned in preceding
(4) be able to	Mental state	+ obligatory infinitive

4. Potential parallel complementation developments

It is possible that similar types of diachronic changes have affected other complement-taking verbs. I will discuss this possibility against the backdrop of a remark on Classical Greek complementation. According to Huitink's synchronic approach to complementation, the semantic oppositions between the three complements of ἐπίσταμαι below "are valid in most contexts", while exceptions between "the participle and ὅτι-clauses occur in a limited set of contexts and can, I believe, be handled by regarding them as instances of presupposition-cancellation".[52]

(30) τὴν δὲ Σάμον **ἐπιστέατο** δόξῃ καὶ Ἡρακλέας στήλας ἴσον ἀπέχειν. (*Hdt.* 8. 132. 3)

"[The Greeks] supposed too that Samos was as far away from them as the Pillars of Heracles."

(31) ὃν ὑμεῖς **ἐπίστασθε** ὑμᾶς προδόντα. (X. *An.* 6. 6. 17)

"Of whom [Dexippus] you **know** that he betrayed you."

(32) **ἐπίστασθε** δέ, ὦ ἄνδρες δικασταί, ὅτι παράδειγμα τοῖς ἄλλοις ἔσται. (Lys. 30. 24)

"But you must **understand**, members of the jury, that it will be an example for the others."

With the diachronic evolution of εὑρίσκω and its complementation structures in mind, it seems to me that these constructional possibilities rather correlate with different evolutionary stages. After all, ἐπίσταμαι only means 'know something' and 'know how to' in Homeric Greek, respectively construed with a NP complement and an obligatory infinitive.[53] Its meaning 'know (as a fact)'+ACP and the more subjective 'suppose'+ACI belong to Classical Greek. Thus, the diachronic distribution seems similar to that of εὑρίσκω.

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[52] Huitink 2009, 22 note 5.
[53] Examples of these two meanings are *Od.* 2. 117 and *Il.* 21. 320.

Moreover, there appears to be more diachronic evidence for semantic and syntactic developments similar to εὑρίσκω in the domain of perception and knowledge predicates. The preliminary diachronic sketch of different Classical Greek complementation structures in table 4 gives an overview of when the different constructions are first used and shows how the first Classical Greek pattern precedes the newer pattern where the complement taking verb also takes an ACI in a more subjective meaning.

Table 4. **Possibly diachronically related complementation patterns**

Complement-taking predicate	*Homeric Greek*	*Classical Greek 1*	*Classical Greek 2*
ἐπίσταμαι	-know+NP complement -know how/be able+infinitive	-know+ACP	-suppose+ACI
γιγνώσκω	-perceive/realize+NP complement	-realize+ACP	-think+ACI
οἶδα	-know+NP complement -know how/be able+infinitive	-know+NCP/ACP	-think+ACI

Importantly, it remains to be seen whether the Classical Greek patterns 1 and 2 should in every usage context be classed according to tradition as factive versus non-factive, since we have seen with εὑρίσκω that this is not always the case. Moreover, the order of evolution of specific meanings can differ per predicate. For example, the ability meaning of εὑρίσκω is a later development from Post-Classical Greek, whereas ἐπίσταμαι had this meaning already in Homeric Greek. The facts from this, admittedly, preliminary diachronic sketch[54] underline the need for individual histories of complement-taking predicates and their constructional possibilities.

5. Conclusions

In tracing the diachronic developments of εὑρίσκω from (1) a predicate of sensory perception to one of (2) mental perception, (3) mental judgment and (4) ability verb, I have demonstrated how εὑρίσκω evolved step-by-step not only semantically, for example through reanalysis, but also constructionally through analogy with other constructions. The findings of this paper can in my view be rephrased as three recommendations for getting closer to a solution of the matching-problem in Ancient Greek complementation. First of all, both the diachrony of the complement-taking predicates and the complementation structures should be taken into account when describing complementation patterns synchronically. An individual history of a predicate such as εὑρίσκω shows that both εὑρίσκω and its complementation structures evolved but also that its semantic and constructional evolution may differ from other knowledge predicates such as ἐπίσταμαι. Second, previously the focus of research into Ancient Greek complementation has been on meaning oppositions between complementation patterns such as factive participles and non-factive infinitive patterns. However, I have shown that such an approach will

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[54] Also, the constructions with and ὡς and ὅτι need to be integrated. To be sure, I expect them to complicate the picture considerably since one, among others, has to take into account the diachronic replacement of ὡς by ὅτι and the diachronic differences per predicate (e. g. the availability of ὡς to γιγνώσκω already in Homeric Greek instead of Classical Greek for the others).

gloss over important semantic and constructional variation of meaning types, since, on the one hand, non-factive combinations of εὑρίσκω with participles existed and, on the other hand, both mental perception and mental judgment εὑρίσκω do not occur with the participle or infinitive complement only. Third, the individual history of εὑρίσκω signals that the inventory of predicates selecting certain complementation structures does in fact change. Therefore, it would be more precise to describe the Ancient Greek complementation systems bottom-up from the point of view of the evolving predicates and their complements in the inventory. Finally, cognitive predicates which in Classical Greek can both occur with factive and non-factive complementation patterns (e. g. ἐπίσταμαι, γιγνώσκω and οἶδα) are a promising start for a deeper understanding of motivational principles for a complementation pattern, because they evolved from a perception to a mental state predicate[55] and evolved constructionally.

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[55] This evolution is cross-linguistically common, as eloquently explained by Sweetser 1990, 23–48. For an application of Sweetser's approach to Homeric Greek complementation, see Luraghi and Sausa 2019.

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