

LINGUISTIC UNIVERSALS AND SYNTACTIC CHANGE

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A crucial problem facing historical linguists is how to account for the direction of certain changes. The direction of change taken by two constructions, Object Raising and Object Deletion, between Medieval and Modern Greek, is documented here, and is shown to be explainable by reference to substantive universal constraints holding on the form these constructions can take in natural language, as evidenced by data from a variety of languages. We conclude that universals guided the direction of these Greek syntactic changes, and in general can rule out certain conceivable changes as impossible. Universals thus lead to a more restrictive, and hence stronger, theory of syntactic change.*

Among the primary concerns of theoretical linguists are the problems of characterizing what constitutes a 'possible' and conversely an 'impossible' human language. Successful answers to these problems allow for the formulation of a more restrictive theory of language than was previously available. Most current research into linguistic universals and universal grammar is directed to these ends. By studying the ways in which all languages are alike and the ways in which they differ, one can better understand the notion of 'possible human language', and therefore better determine those elements or combinations of elements which cannot occur in a human language. The specification 'combinations of elements' is necessary, for it may be the case that a language may have either feature X or feature Y, but not both.

Historical linguists face a similar problem. They study the movement from one 'possible human language', i.e. an attested or reconstructed stage of a language,

* The contents of this paper are drawn largely from my doctoral dissertation (Joseph 1978b). I profited greatly from the guidance and advice of my advisers—Judith Aissen, David Perlmutter, and Jochem Schindler. The research and work herein were supported by the Arthur Lehman Scholarship Fund, an NDFL (NDEA Title VI) grant for Modern Greek (both administered through Harvard University), and a post-doctoral fellowship offered by the Izaak Walton Killam Memorial Scholarship Committee of the University of Alberta. Pre-Modern Greek forms are given in standard transliteration, while Modern Greek forms are given in a rough morphophonemic transcription—however, *d* is the voiced interdental fricative, and *g* is the voiced velar fricative.

Citations from pre-Medieval texts are identified by traditional abbreviations, and can be found in standard editions of the works cited. Medieval texts are identified by the following abbreviations:

Belis. II	Belisarios II (Wagner 1874:348–78)
Boustr.	Chronicle of Boustronios (Sathas 1873, Vol. 2)
Doukas	Historia Byzantina of M. Ducas (Migne 1866, Vol. 157)
Erotop.	Hesseling & Pernot 1913
Hermon.	Legrand 1890
Lyb.	Lybistros and Rhodamne (Wagner 1881:242–349)
Makh.	Dawkins 1932
Monemb.	Chronicle of Monembasias (Baletas 1947:41–7)
Quadrup.	Fable of the quadrupeds (Wagner 1874:141–78)
Rim. Alex.	Holton 1974
Spanos	Mass of the beardless man (Legrand 1881:28–47)

to another one, i.e. a later stage of that language. However, the historical linguist must try to determine why a language changed in the way it did, rather than in some other way. Given the range of conceivable changes which a language might undergo, which are possible changes and which are not? As with synchronic theory, successful answers to this question can lead to the formulation of a more restrictive theory of language change.

These two pursuits complement each other. Since languages change from one possible form to another, the constraints imposed by linguistic theory on possible synchronic grammars provide the upper bounds within which changes can occur.¹ Conversely, showing a conceivable historical change to be in fact impossible advances the understanding of synchronic grammars, for a conceivable synchronic state which could have arisen is thus ruled out.

In this paper, an attempt is made to define further the notion of 'possible diachronic change' with respect to syntactic change. Substantive universal constraints which hold in synchronic grammars are used to explain the direction taken by certain changes in syntax between Medieval and Modern Greek. It is claimed that Greek could not move from one possible language state to another conceivable one because the latter is ruled out by linguistic theory as an 'impossible human language'. The details are given below in §§1-3.

The use of linguistic universals to explain syntactic changes is not new. Parker (1976:452), in discussing possible origins of the IE passive voice, proposes that the process of syntactic re-analysis is not 'completely unconstrained ... A speaker must adhere to [certain] conditions as he assigns an SD [= Structural Description] to an utterance ... he may not violate any linguistic universals.'

Similarly, Anttila (1975:274), following Henning Andersen, gives the diagram of Figure 1, suggesting that the formation of a grammar at a later stage of a

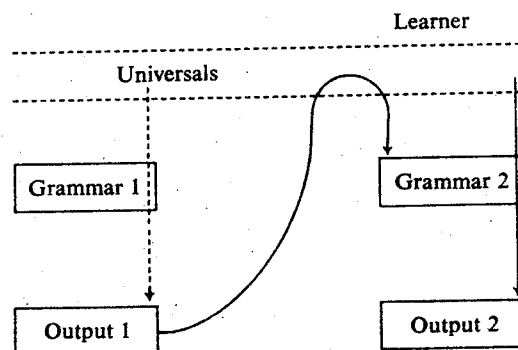


FIGURE 1.

language is a function of the output of an earlier stage being 'filtered' through a component of linguistic universals.

However, as Ebert (1976:ix) has noted, the evaluation of such proposals must wait for the notion of 'linguistic universals' to acquire more empirical content. Proposed universals must be formulated so as to be empirically testable; if they

¹ See Lightfoot (1976:37) for a similar view. It should be noted that not all linguists agree (see, for instance, Steele's remarks in Lightfoot, p. 34).

pass the test, they can be used in historical explanations. As will become clear in the discussion below, even if a particular proposed universal is counter-exemplified by some language, there is still some value to the search, and some advancement of the insights into the ways languages can change.

This paper is organized as follows: in §1, relevant data are given from earlier stages of Greek and from Modern Greek. To set the stage for a discussion of the changes, a consideration of the loss of the infinitive between Medieval and Modern Greek is necessary. Then two constructions, Object Raising (OR) and Object Deletion (OD), are presented, and the facts concerning their forms in earlier stages of Greek and in Modern Greek are given. This is followed in §2 by a discussion, and subsequent rejection, of several possible accounts for the changes in these constructions. In §3, a more satisfactory account of why these constructions changed as they did is presented, drawing on substantive universal constraints as an explanatory device: a survey of the data, suggesting the correctness of the universals in question, is provided, and the possible functional motivations for the proposed universals are considered. In §4, a model of syntactic change based on the use of these universals is developed, and the problem of the correctness of the universals is addressed.

THE DATA

1.1. Earlier stages of Greek, including Classical, Hellenistic, and early Medieval (10th–13th centuries), had a productive verbal category of INFINITIVE, informally characterizable as subsuming those verb forms with no systematic markings for the person and number of their semantic subjects. Moreover, this category had several uses in the grammar. Modern Greek, however, has no such verbal category;² in places where the earlier language had an infinitive, a finite verb form (marked for person and number) is found instead, co-occurring with the particle *ná* or the complementizers *pós* or *óti*, under conditions not relevant here.³

The replacement of the infinitive by finite verb forms, with the subsequent effects on surface constructions which utilized an infinitive in earlier Greek, constituted a gradual process that occurred over the roughly ten centuries between Hellenistic and Medieval Greek. Moreover, the developments with the infinitive represent a classic case of the DIFFUSION of a change through the grammar of a

² Modern Greek has one form which productively continues an older infinitive: the grammatical formative that occurs after forms of *éxo* 'have' in perfect tense formations, e.g. *éxo grápsi* 'I have written'. The form *grápsi* continues a medieval infinitive *grápsein*, itself an analogical replacement for the old aorist infinitive *grápsai*. The form is restricted in Modern Greek to this context; whether it is in any sense still an 'infinitive', or instead a grammaticalized verbal form used in perfect tenses, is still unclear. I know of no evidence which could decide this issue. Thus a form like *grápsi* is in the anomalous situation of a 'productive remnant'—productive because it can be formed from virtually any verb in the language, yet a remnant because of its restricted occurrence. Other remnants of infinitives exist in Modern Greek, especially lexicalized infinitival nominalizations (*tó fagi* 'food' < *tò phageín*) and fixed expressions borrowed from the learned archaizing language (*fér' ipín* 'for example' < *phér' eipeín*).

³ Roughly speaking, the distinction is based on the semantic class of the verb upon which the infinitive depended, as well as the construction in which it occurred; cf. Jannaris (1968, §2078 ff.) and Joseph (1978b:19–22).

language,⁴ since some constructions were affected earlier than others—and, within a particular construction type, some participating verbs were affected before others.

The changes that accompanied the loss of the infinitive can be characterized in terms of changes in the syntactic rules by which the constructions were produced; therefore the effects on surface constructions of infinitive replacement can be viewed as effects on the nature of particular syntactic rules responsible for particular constructions. This view is adopted essentially for ease of explication in what follows.⁵

The diffusion of the loss of the infinitive through the grammar of Greek can be illustrated by the following facts.⁶ In Hellenistic Greek, verbs which governed sentential object complements (e.g. *tolmô* 'dare', *epithumô* 'wish', *thélô* 'want') could govern either an infinitival complement or a finite clause, whether they involved 'like subjects' (EQUI) or 'unlike subjects' (Subject-to-Object Raising with an infinitive). Some of these verbs were found exclusively with infinitives at this stage, while others were found with both types of complements. The two complement types could even occur conjoined:

- (1) *Thélô* *dè pántas humâs laleîn glôssais*
 want/1SG but all/ACC you/ACC speak/INF tongues/DAT
mállon dè hina prophêteúete. (1Cor.14:5)
 rather but PART preach/2PL.SUBJUNC

'I want you all to speak in tongues or rather to preach.' (lit., '... that you preach')

But verbs which governed a sentential subject, participating in Subject-to-Subject Raising (e.g. *méllô* 'be about to', *opheilô* 'ought', *dúnamai* 'can') were found exclusively with the infinitive at this stage; they had none of the class-internal variation found with EQUI and Subject-to-Object Raising verbs.

By the time of Medieval Greek, the demise of the infinitive was more complete. Object-complement verbs like *tolmô* were found with a finite verb, or occasionally with an infinitive; but no verb at this stage governed only an infinitive to the exclusion of other complement types. The subject-complement verbs showed the same pattern—most often occurring with a finite complement, but sporadically with an infinitive.

Thus different classes of verbs, i.e. construction types, were affected by the infinitive replacement process at different times; and within each class, different verbs were affected at different times. Evidence such as ex. 1 suggests a long period of competition between infinitival constructions and functionally-equivalent finite constructions. The competition eventually was decided in favor of the non-infinitival mode of expression.

⁴ For a discussion of DIFFUSION with respect to phonological change, see Wang 1969.

⁵ This approach should not be taken to imply that abstract formal constructs such as transformational rules change independently, thereby CAUSING changes in the surface constructions. It seems more likely that changes in constructions occur at the surface, through processes such as re-analysis and the analogical extension of forms into new syntagms; they are then reflected in changes in the transformational rules.

⁶ For a fuller discussion of the facts regarding infinitive loss, cf. Hesseling 1892, Burguière 1960, Joseph 1978b (Ch. 2), and Greek grammars of the relevant periods, especially Blass-Debrunner 1961 for New Testament Greek.

These diffusional developments with the infinitive and its finite-verb replacements are easily understandable in terms of the standard model of language transmission. The ultimate loss of a linguistic feature, whether a rule or a type of formation,⁷ through the gradual acquisition of more and more restrictions on its use, is a common occurrence. In such a situation, children are often the major source of innovation, for the highly-constrained feature becomes harder for successive generations to learn. They tend to generalize the unrestricted, unconditioned variant (in this case, finite complementation) to novel constructions where it was not used in the previous generations. Adult speakers, too, because of the strain placed upon their memory by the conditions and restrictions on the infinitive, could participate in the spread of innovative finite complementation.⁸

In both cases—generalization of the unrestricted form by children, and failure to maintain the restricted form by adults—the paradigm for the diffusion of finite complementation would involve the novel introduction of a finite verb into constructions where had it previously not been used. Thus the notion of 'the replacement of the infinitive by finite-verb forms' can be taken to reflect the reality of the diffusional spread of finite verbs at the expense of infinitives.⁹

This paradigm actually defines the origin of new construction types with a finite verb. The question of particular interest here, to which the discussion of the changes in OR and OD contributes, is why particular constructions took the form they did at the point of their origin, i.e. at the point when finite complementation was first introduced in place of an earlier infinitive. That is, in terms of the rules by which the constructions were produced, why did the rules in question end up as they did when the finite-verb replacements reached their constructions?¹⁰

1.2. OR refers to the process found in English sentences like:

- (2) a. *This book is hard to read.*
b. *Mary is tough to beat at tennis.*

⁷ Under the assumption that infinitives represent underlying finite verbs, the replacement of the infinitive can be taken as a change in the conditions under which infinitivization of underlying finite verbs could take place. In earlier stages of Greek, the Infinitivization rule was relatively free; but in later stages, it acquired more and more conditions on its application, to the point where it no longer functioned in the grammar. Note that, if infinitives are taken to be underlyingly present (cf. Bresnan 1971, Lasnik & Fiengo 1974), then the problem becomes one of the distribution of finite vs. non-finite complements. The distributional statement would be equivalent to the conditions under which the Infinitivization rule would apply. Thus nothing crucial hinges on this assumption.

⁸ As Anttila (1972:181) points out, only very FREQUENT irregular forms are likely to resist regularization, in part because their frequency guarantees that they will always be fresh in a person's memory.

⁹ The 'reality' of this notion can also be seen in the fact that different manuscript versions of the same text, sometimes no more than 50 years apart, often show infinitives in the earlier version, but finite verbs in the later. (See, for instance, Schmitt 1904.)

¹⁰ The question of the ORIGIN of these syntactic changes should be kept distinct from the question of their SPREAD. The resolution of the competition indicated by ex. 1, between two functionally equivalent alternatives, is a question of the spread of a syntactic change; what actually occurred when an infinitive was replaced in a construction is a question of the origin of a syntactic change, and that is the problem addressed in this paper.

This is often referred to as Tough-Movement in the literature. It involves the raising of an object (or better, non-subject) NP that is contained within a sentential subject, to become a matrix-clause subject.

OD is the construction found in English sentences like:¹¹

- (3) a. *Mary is pretty to look at.*
- b. *This rock is too heavy for me to lift.*
- c. *The chicken is ready for you to put in the oven.*

This involves the deletion of a subordinate-clause object (or better, non-subject) under identity with a matrix-clause subject. These processes can be schematized as shown in Figures 2a and 2b, respectively.¹²

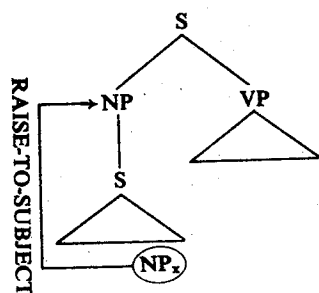


FIGURE 2a.

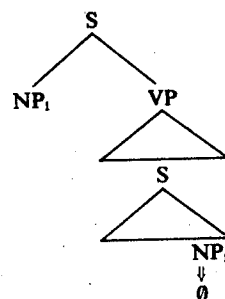


FIGURE 2b.

These are fairly familiar constructions, so no further details need be given.¹³ To trace the changes in these constructions, I first present the facts concerning OR

¹¹ These sentence types may represent different rules at work, since trigger adjectives have different properties. Thus adjectives like *pretty* allow OD only in the next clause down, whereas *ready* and *too* + ADJ allow OD over an unbounded variable. However, these sub-types can be subsumed under a larger 'rule class', all sharing the crucial property that they can delete complement objects under identity with a matrix subject. Indeed, their similar behavior in the diachronic developments to be discussed in Greek suggests that they do form a cohesive rule class.

¹² This formalism is meant only as an expository device; no substantive claims about the nature of linguistic structures or of language in general are implied by the use of standard transformational grammar 'trees'. However, for the purposes of the analyses here, 'standard' framework of syntactic theory is assumed, in which a single deep structure is posited for synonymous distinct surface structures; factors such as selectional and subcategorizational restrictions are taken to be motivations for positing transformational relations between pairs of sentences.

¹³ The position is taken here that these two constructions are essentially distinct from one another (for the opposite view, see Lasnik & Fiengo). A reflection of this distinction is the fact that the OR adjectives can occur with overt sentential subjects, extraposed or otherwise:

- a. *It is hard to read this book | To read this book is hard.*
- b. *It was easy to find Joe | To find Joe was easy.*

But the OD adjectives cannot:

- c. **It is pretty to look at Mary | *To look at Mary is pretty.*
- d. **It is too heavy to lift this rock | *To lift this rock is too heavy.*

Similarly, these constructions differ in their treatment of idiom chunks. OR adjectives allow (some) idiom chunks as matrix subjects, while OD adjectives allow none:

- e. *Tabs are hard to keep on John—he's so elusive!*
- f. **Tabs are ready to keep on John.*

and OD in earlier stages of Greek, and then examples of how they changed, including their ultimate forms in Modern Greek.

1.3. In Greek up to Medieval times, roughly the 12th century, OR and OD were very similar to the English sentences of 2-3 respectively; the complement was an infinitive, lacking any overt object.¹⁴ Examples of each type abound in Classical Greek, but are harder to find in Hellenistic and early Medieval Greek, in part because of the more restricted nature of vernacular texts from these periods.

Representative examples of OR and OD from these different periods are as follows:¹⁵

(4) ANCIENT GREEK

OR: a. *Haútē ... hē ergasía matheîn te hraístē*
this-the-work/FEM.NOM learn/INF PART easiest/FEM.NOM
edókei eînai. (Xen. *Oec.* 6.9)
seemed/3SG be/INF

'This work seemed to be easiest to learn.'

OD: b. *Kai gâr horân stugnôs ên.* (Xen. *Anab.* 2.6.9)
and for see/INF gloomy/NOM was/3SG

'For he was gloomy to look at.'

(5) HELLENISTIC GREEK¹⁶

OR: a. *Kai eiden hē gunē hòti ... tò ksúlon ...*
and saw/3SG the-woman/NOM that the-tree/NTR
arestòn toîs ophthalmóis ideîn (Gen. 3:6)
pleasing/NTR the-eyes/DAT see/INF

'And the woman saw that the tree was pleasing to (her) eyes to see.'

OD: b. *Kai ên ho trugētòs hétoimos tou*
and was/3SG the-harvest/NOM ready/NOM PART
therízein. (ISam. 13:21)
harvest/INF

'And the harvest was ready for harvesting.'

(6) MEDIEVAL GREEK

OR: a. *Tragoudoûsin tò paránomon horôsai mustérion.* (Spanos 26,
sing-of/3PL the-illegal/NTR see/INF rite/NTR [12th c.]
'They sing of the rite (which is) illegal to see.'

¹⁴ The only exception is one Septuagint passage (Ezekiel 21:16), which shows an OD structure with a complementary infinitive and an object pronoun. However, this passage is especially obscure in both the Hebrew and the Greek; thus the Greek seems to be nothing more than a guess on the part of the translator, working with a passage he did not understand. I am indebted to Frank Cross for his help here.

¹⁵ These examples were found through the use of grammars, lexicons, and concordances for Classical and Biblical Greek—and, in the case of Medieval Greek, through a careful reading of the entire Medieval Greek vernacular corpus. Unfortunately, no collection of these sentence types exists for any stage of Greek. Further examples are to be found in Joseph 1978b (Chs. 3-4).

¹⁶ These examples are from the Septuagint. This existed in Greek as early as 100 B.C., and the earliest EXTANT versions date from 400 A.D. Thus it is roughly contemporary with New Testament Greek, though possibly somewhat more archaic.

- b. *Kaì háptetai* *toû érgou,* *kaì ên* *ideîn*
 and take-hold-of/3SG the-work/GEN and was/3SG see/INF
thaumásion *eis khrónon plēróménon.* (Belis. II 44-5, 14th c.)
 wondrous/NTR on time completed/NTR

'And he took charge of the work_i, and it_i was wondrous to see, having been completed on time.'

- OD: *Toûs ... khrusínous hetoímous ékhei toû doûnai.*
 the-gold-pieces/ACC ready/ACC.PL has/3SG PART give/INF
 ((Doukas 1164A))¹⁷

'He has the gold pieces ready to give (over).'

- d. *Mè phoboû, gúnai,* *tèn génnan,* *toû*
 not fear/2SG woman/VOC the-childbirth/ACC PART
patheîn kakôtikón gar. (Hermon. A' 43-4, 12th c.)
 suffer/INF hurtful/NTR though

'O woman, do not fear the childbirth, though (it may be) a hurtful thing to suffer.'

A full syntactic justification of the analysis of these sentences as OR and OD is not possible here, but it can be noted that the matrix adjectives in these sentences correspond to adjectives which, in English and other languages, participate in corresponding constructions.¹⁸

As the above evidence shows, both OR and OD in these stages of Greek utilized an infinitive as the complement-clause verb, and were characterized by the absence of a surface object with this infinitive. Moreover, no examples are found, throughout these periods, of OR or OD sentences with anything other than infinitives in the embedded clauses; i.e., no paraphrases with finite complements seem to have occurred at all. Thus the infinitive was used in these constructions to the exclusion of all other complement types, so that the occurrence of a finite subordinate verb would represent the novel introduction of finite complementation into constructions which formerly had only an infinitive. The changes that occurred when infinitive replacement reached OR and OD thus afford an opportunity to investigate the origins of syntactic change.

1.4. When OR and OD sentences first occur with finite complementation, the constructions have undergone changes beyond the simple replacement of the earlier infinitive by a finite verb. In particular, the finite-complement varieties of OR and OD do not appear with a 'zero' in the complement clause; instead, an overt object pronoun occurs.

The following examples illustrate this development. Sentence 7 is an OR sentence from a 1578 chronicle:

¹⁷ The example from Doukas actually dates from the 15th century; however, Doukas wrote in a brand of Greek that clearly was not that of the contemporaneous colloquial, to judge from the numerous vernacular poems, romances, and chronicles of the 13th-15th centuries. His Greek more closely approximated that of the early Byzantine chroniclers of the 8th-10th centuries; thus this example, though chronologically more recent than 6d, seems nonetheless representative of a linguistically earlier stage.

¹⁸ Also, the OR adjectives are attested in sentences with overt sentential subjects, while the OD adjectives are not—and the number of attestations for some OD adjectives, throughout Greek, is high enough to make such an 'argument from silence' meaningful. (See Joseph 1978b, Chs. 3-4 respectively, for details concerning the justification of the OD and OR analyses.)

- (7) *Kai êton huperthamásio tò ergo nà tò*
 and was/3SG very-wondrous/NTR the-work₁/NTR PART it₁/ACC
éblepe tinàs kai nà tò akoúei. (Monemb. 42)
 saw/3SG someone/NOM and it₁ hear/3SG

'And the work was especially wondrous for people to see and to hear (about).'

This differs from the infinitival OR sentences in that a pronominal object occurs in the complement clause. In terms of the process by which such sentences were produced, one could say that the OR rule has become a COPYING rule, leaving a pronominal copy of the raised nominal in the clause out of which it was raised.¹⁹

Examples showing the changes in the OD construction include the following:

- (8) a. *Êipé tēs nà ékhēi hétoimon tòn dāon*
 said/3SG her/GEN have/3SG ready/ACC.MASC the-torch₁/ACC.MASC
nà tòn epárēi. (Lyb. 2663, 14th c.)
 it₁/ACC.MASC take/3SG
 'He told her to have the torch ready for him to take.'
 b. *Ān tà eksēgēthēka ... êton pollà baretà ...*
 if them₁/NTR told/1SG were/3PL very heavy/NTR.PL
eis hautēs sas nà t' agroikāte. (Makh. §634, l. 13-14, 15th c.)
 on self your them₁ hear/2PL
 'If I told them ... they would be very weighty for you to hear.'

The presence of an object pronoun in the complement clause here means that there is no longer any motivation for positing a deletion rule in this construction; the complement clause still has an object, retained in pronominal form, so no deletion has occurred. The form of these sentences presumably results from whatever process guarantees that the second of two coreferent NP's in a sentence will surface as a pronoun. Thus, in terms of the process by which this construction was produced, one could say that the OD rule has been lost from the grammar between these two stages of Greek.

The sentence types in 7-8 are the only types found in Modern Greek for these constructions. Ex. 9 exemplifies OR in Modern Greek, while 10 exemplifies the Modern Greek continuation of earlier OD sentences:

- (9) *Tá angliká, ine diskola ná tá, katalávo.*
 the-English/NTR.PL are hard/NTR.PL them/NTR.PL understand/1SG
 'English is difficult for me to understand.'
 (10) a. *I María, ine ómorfi ná tīn, kitázis.*
 Mary/NOM is pretty/NOM.FEM her/ACC look-at/2SG
 'Mary is pretty (for you) to look at.'
 b. *O musakás, ine étimos ná tón,*
 the-moussaka/NOM.MASC is ready/NOM.MASC it/ACC.MASC
vólome s tó fúrno.
 put/1PL in the-oven
 'The moussaka is ready for us to put in the oven.'

¹⁹ For a discussion of copying/raising rules in syntax, see Joseph 1976, Hajati 1977, and Joseph & Perlmutter (ms).

The presence of a complement-clause object pronoun in such sentences is obligatory—its absence yields sentences which are far less than acceptable:²⁰

- (11) **Tá angliká ine diskola ná katalávo.*
 (12) a. **I María ine ómorfi ná kitázis.*
 b. **O musakás ine étimos ná válome s tó fúrno.*

These new sentence types must have co-existed for a period with the old infinitival constructions. The exclusive occurrence in Modern Greek of the finite-complement type indicates that the competition, as in all finite-verb vs. infinitive competition in Standard Modern Greek, was resolved in favor of the finite verb. Still, since OR and OD utilized an infinitive to the exclusion of all other complement types in earlier stages of Greek (according to the paradigm developed in §1.1), there must have been a point at which the finite verbs were newly introduced into these constructions in place of the infinitives.

The most interesting aspect of these changes, then, is that, with the introduction of finite verbs in these constructions, there was apparently a categorical jump in sentence types. From OR and OD with no overt objects in the complement clause, and with infinitival complementation, Greek seems to have developed OR and 'OD' with overt complement-clause objects (pronouns), and with finite complementation. But there is a logically intermediate stage of finite complementation with no overt complement object:

- (13) a. **Hē hódos_i einai dúskolē ná heuroúme Ø_i.*
 the-road/NOM is/3SG difficult/NOM find/1PL
 'The road is difficult for us to find.'
 b. **Hē María_i einai ómorphē ná koitázoume Ø_i.*
 Mary/NOM is/3SG pretty/NOM look-at/1PL
 'Mary is pretty for us to look at.'

This does not seem to occur at all in Greek, to judge from the fact that corresponding sentences with complement objects are the only ones attested in texts, and from the ungrammaticality of sentences like 13 in Modern Greek.²¹ Thus, in a real sense, the changes in these sentence types were ABRUPT, not gradual. With the replacement of the infinitive in these constructions, OR and OD did not continue to apply as they had in earlier stages of Greek—in particular, they no longer left a 'hole' or zero in the complement clause.²²

The facts concerning these changes in OR and OD sentences in Greek, then, pose very interesting problems for the historical linguist: Why did this categorical

²⁰ Native speakers typically judge such sentences as clearly 'having something missing', or as 'understandable, but not the way you would say that'—or as being 'somewhat indeterminate and ill-defined'.

²¹ Modern Greek, at least impressionistically speaking, does not seem very different from late Medieval Greek, certainly not so far as the syntax is concerned; it thus offers a unique control over less-accessible judgments about Medieval Greek sentences.

²² It does not seem to be the case that a zero and a pronoun are functionally equivalent in late Medieval Greek or in Modern Greek—even though many languages employ zeros for ordinary anaphoric reference, just as a language like English uses pronominal forms. Thus Modern Greek has no general rule allowing the absence of (at least definite) object pronouns on the surface.

jump in sentence type occur? Is there some principled way of excluding the logically intermediate but non-occurring stage? If so, then the direction these changes took can be explained. This becomes the problem posed in §1 above: why did the language change in the way it did, and not in some other conceivable way? In §2, several possible accounts of the OR/OD changes will be suggested and rejected, in part because of their inability to answer this question. In §3, a more comprehensive account is offered which addresses this question directly.

SOME ACCOUNTS OF THESE CHANGES AND THEIR WEAKNESSES

2.1. One possible account of the changes in OR and OD would be a formalistic one, in which the changes in the constructions are 'explained' by changes in the syntactic rules by which they are produced. That is, one might claim that the transformational rule of OD was simply lost from the grammar, and that the OR rule simply changed its manner of application from 'chopping' to 'copying'. One would still presumably have to allow for the replacement of the infinitive in these constructions by a finite verb, since there is no a-priori reason why the absence of OD or the existence of OR as a copying rule should preclude the occurrence of an infinitive in the complement clause of these constructions.²³

It should be clear that such an account adequately DESCRIBES the changes that occurred, but in no sense EXPLAINS them. No motivation is offered for the rule change, or for why both underwent a change rather than just one. More importantly, no connection is made between the replacement of the infinitive and the changes in the rules/constructions, even though the historical evidence suggests that the two developments were crucially inter-related: the changed constructions appear for the first time only after the infinitive is replaced. In short, such an approach does not yield too satisfactory an account of these changes.

2.2. Another possible account would hold that two options existed in Greek all along for the expression of OR and OD sentences—one form with an object pronoun in the complement clause (with or possibly without an infinitive), and one without (presumably with an infinitive)—and that, with the loss of the infinitive, the type with the complement object pronoun was generalized at the expense of the other. Such an hypothesis is not supported by the textual evidence (see §1.3); nevertheless, the notion of a 'finite-complement/pronounless' form of OR and OD sentences being given up in favor of a complement-object-pronoun variety is important enough to merit further discussion.

2.3. Thus, in this next account to be considered, it is assumed (in accordance with the textual evidence) that OR and OD had only an infinitive as complement in earlier stages of Greek. The replacement of the infinitive could occur either by the process sketched in §1.1, or by a formal re-analysis of the infinitive in these constructions as a finite verb (possible because of the merger of the infinitive with

²³ Thus some English sentences with an OD structure can fail to undergo OD, but still surface acceptably with an infinitive and complement object: *That rock is too heavy for me to pick IT up.* Similarly, Spanish has sentences with OR by copying which surface acceptably with a complement-clause infinitive: *Este libro será difícil de leerseLO a los chicos* 'This book will be difficult to read [IT] to the kids.'

universals, the direction of the changes with OR and OD can be explained, under the assumption that Greek would have changed so as not to violate the universals.

3.2. Central to this discussion of the changes in OR and OD is the following claim:

- (18) A language which is like Modern Greek in all respects, except that
 (a) it has a 'chopping' rule of OR (i.e. OR with no copy left behind),
 and/or (b) it has a rule of OD, is not a possible human language.

This claim follows from more general principles:

- (19) a. OR cannot deprive a finite verb of its object.
 b. OD cannot delete the object of a finite verb.

These principles are tentatively proposed as linguistic universals.²⁷

The designation 'finite verb' in 19 is not arbitrary or ad-hoc, but rather is motivated on internal grounds within Greek. There are at least three generalizations of Greek syntax for which the distinction between finite and non-finite verbal forms is crucial. This is an important step, for the principles in 19 make predictions only about languages in which the distinction between FINITE and NON-FINITE verbs is relevant; and that relevance can be determined only on language-internal grounds.²⁸ Thus the Polynesian language Niuean has no language-internal grounds for distinguishing between these two classes of verbs;²⁹ for such a language, the principles in 19 make no predictions whatever.

The three generalizations concerning finiteness in Greek are:³⁰

- (20) a. Clitic pronouns attach to the right of non-finite verbs, and to the left of finite verbs.³¹
 b. The negative particle *dén* can be used only with finite verbs.
 c. Only finite verbs can show person agreement.

²⁷ These principles clearly have something in common, and so are probably collapsible in some way. Thus one could say that no two-clause rule affecting an object can operate into a finite clause; but since OR and OD are the only two such rules in Greek (and in most languages I know), the degree of generality gained is minimal. Or 19a-b might be subsumable under a more general principle referring to the systematic verbal markings found in a particular language; thus Chinese has no distinction between finite and non-finite verbs, but restricts the aspectual markers (adverbials) that can occur with the complement verb in OR/OD sentences. One problem with such a suggestion, though, is the difficulty in making precise the notion of 'systematic verbal markings'. Finally, one might want to relate 19a-b to Chomsky's (1973) Tensed Sentence Condition, prohibiting movement out of or deletion into tensed clauses. But such a constraint cannot be valid universally, as Bach & Horn 1976 have shown; accordingly, it cannot be used here.

²⁸ This is not to say that a universal characterization of 'finiteness' is impossible; but it is an area which requires further research.

²⁹ Sandra Chung (p.c.)

³⁰ Since Modern Greek serves as a control over late Medieval Greek, it is assumed that these generalizations hold for Medieval Greek as well (cf. fn. 21). Individual commentators, e.g. Hesselring & Pernot (1966), have noted that Clitic Placement in Medieval Greek seems to have been the same as in Standard Modern Greek.

³¹ This generalization regarding Clitic Placement holds only for Standard Modern Greek. Some dialects, e.g. Cypriot Greek, have clitics regularly postposed after their verb in positive, declarative sentences.

These three statements identify the non-finite verb forms of Greek as the present active participle in *-ondas*, the medio-passive participle in *-menos*, and the positive imperatives, with a singular in *-e* and a plural in *-te*.³² The finite forms include the present and past tense indicative forms, the perfect tense system forms, and subjunctives.

Some examples which demonstrate the correctness of these generalizations are given below. Ex. 21 shows the position of clitics with non-finite forms; 22 shows their position with finite forms; 23 shows the use of the negative particle *dén*:

- (21) a. *gráfondás* *to*
writing/ACT.PPL it/ACC
b. *episkeptómenos tin*
visiting/MED.PPL her/ACC
c. *grápse* *to!*
write/IMPV.SG it
d. *grápste* *to!*
write/IMPV.PL it
e. **tó gráfondas* / **tín episkeptómenos* / **tó gráps(t)e*
- (22) a. *tó gráfo*
it write/1SG.PRES.IND
b. *tó égrapsa*
it wrote/1SG.PAST.IND
c. *án tó grápso*
if it write/1SG.SUBJUNC
d. **gráfo to* / **égrapsá to* / **án gráfo to*
- (23) a. *dén gráfo* / *dén égrapsa* / *án dén grápso*
b. **dén gráfondas* / **dén episkeptómenos* / **dén gráps(t)e*

Finally, regarding the person-agreement generalization 20c, all the finite forms can (and in fact must) show person agreement with their subjects, whereas none of the non-finite forms can. The active participle is invariant in form; and the medio-passive participle and imperatives have different singular and plural forms, but do not inflect for person.³³ Thus, internal to Greek, these three generalizations serve to distinguish the two classes of verbs from one another.

Given this distinction, it is clear how these principles would prevent OR and OD from continuing to apply as they had done earlier. The verbal form which replaced the infinitive in these constructions was fully finite by the tests indicated in 20;³⁴ e.g., such verbs showed person agreement, and have clitic pronouns to their left.

³² There are different imperative forms for durative and punctual aspects, but that difference is irrelevant here. Also, some irregular imperative forms do not end in *-e* in the singular, e.g. *dés* 'see'. The invariant form in the perfect tenses with *éxo* 'have' (e.g. *grápsi*, cf. fn. 2) is probably to be included among the non-finite forms. However, such forms are restricted to the perfect tense; and it appears that some form of clause reduction occurs there, making it impossible to test any of the generalizations with this form.

³³ The 'second-personness' of imperatives can be taken as a function of their particular illocutionary force, and not as a reflection of person agreement.

³⁴ Again, it is assumed that the tests that are valid for Modern Greek can be projected back for late Medieval Greek (see also fnn. 21, 30).

Therefore, if principles 19a-b are valid linguistic universals, OR could not deprive this finite verb of its object, nor could OD delete its object. Thus these rules could not, in this account, continue to apply as they had in earlier Greek, since that would have led to the ungrammatical sentences of 13. The change in the OD construction, then, is a direct consequence of the presence of a finite verb in the complement which would preclude the continued application of the deletion process.

In the case of OR, though, we have seen that the rule continued in Greek, but in a different form. Principle 19a prohibits the simple raising of the object of finite verbs. However, another way to satisfy this constraint is to have an object pronoun in the subordinate clause (in other terms, having OR apply as a copying rule). With such a pronominal copy, the subordinate finite verb has not been deprived of its object; the surface effect is as if OR had not applied, i.e. as if the constraint had not been violated.

I claim, then, that the 'logically intermediate' step between OR/OD sentences with an infinitive and a 'zero' as the complement-clause object, and OR/OD sentences with a finite verb and an object pronoun in the complement clause, did not occur in Greek because it represents an impossible sentence type for the language. If the principles of 19 represent valid universal constraints, then the maintenance of OR and OD as they were in earlier stages would be in violation of these universals. Thus the universals provide an explanation for the direction of the changes.

Clearly, evidence must be given in support of these proposed universals. One can note, for instance, that such principles seem to have been operative in earlier Greek, to judge from the exclusive use of an infinitive in these constructions before Medieval Greek. And it can be shown that similar facts are to be found in other languages.

The claim that 19a-b are universals is a very strong claim. It can be falsified by finding a language, in which finiteness/non-finiteness is a relevant distinction for verbs, which allows OD and (non-copy) OR to apply freely into a clause with a finite verb. However, the claim cannot be verified absolutely, since it would be impossible to test every natural language to see if 19a-b hold.³⁵ Therefore, the most that can be done is to show that 19a-b are *PLAUSIBLE* universals by demonstrating that the predictions they make about other languages can be substantiated—in particular, that they hold in a variety of languages, preferably ones that are genetically and typologically unrelated, in which finiteness/non-finiteness is a relevant distinction for verbs.

3.3. A brief survey of this sort, covering data from a wide range of languages, cannot undertake a systematic investigation of all the properties of relevant sentences in each language. However, since the goal is merely to suggest the plausibility of 19a-b as linguistic universals, such a survey can in fact be useful. The facts concerning OR and OD in various languages are quite parallel; they are therefore presented together.

³⁵ Even if it were possible to check every language currently spoken, it would not be possible to check all the languages which have died out over the centuries.

English in general provides support for the constraints in 19. It has been noted by several linguists that OR and OD are generally restricted to operating out of (surface) non-finite clauses—where finite clauses are those which can occur with the complementizer *that*, i.e. clauses with tensed verbs or subjunctives. Thus Berman (1973:43, fn. 8) cites sentences like these:

- (24) a. *That book is impossible to believe John to have stolen.*
 b. **That book is impossible to believe that John stole.*

Additional examples of such minimal pairs, differing only in the finiteness of the verb which loses its object, can be adduced:³⁶

- (25) a. *John would be difficult for me to imagine inviting Ø to my party.*
 b. **John would be difficult for me to imagine (that) I might invite Ø to my party.*
 (26) a. *These books will be hard to persuade the kids to read Ø.*
 b. **These books will be hard to persuade the kids that they should read Ø.*

Similarly, the restriction on OD has been noted by Ross (1967:228) and others,³⁷ and is evidenced by such unacceptable sentences as:

- (27) a. **Mary is pretty that I look at Ø.*
 b. **The socks are ready for you to announce that you will put on Ø.*
 c. **This rock is too heavy for us to claim that we can pick up Ø.*
 d. **That puppy is too cute for you to be able to admit that you dislike Ø.*

Note also such minimal pairs as:

- (28) a. **Jane is too ugly for us to be able to convince John that he should kiss Ø.*
 b. *Jane is too ugly for us to be able to convince John to kiss Ø.*
 (29) a. **The cookies are ready for you to tell Ted that he can put Ø in the oven.*
 b. *The cookies are ready for you to tell Ted to put Ø in the oven.*

The unacceptable sentences are those where OR/OD removes the object from a clause with a finite verb, as predicted by the principles of 19. Also, as 19b predicts, a sentence like 27d can be made acceptable by the addition of a pronoun to the lower clause, i.e. by not allowing the deletion to occur in violation of the proposed constraint (regarding 27a, cf. fn. 36):

- (30) *That puppy is too cute for you to be able to admit that you dislike IT.*

Facts such as these from English, then, show the effects of these constraints in a language other than Greek.³⁸

³⁶ Even though multiply-embedded sentences like these (and the parallel OD sentences in 28–29, below) are in general somewhat odd and hard to process, it is necessary to use such sentences to test adequately the possibility of applying OR/OD into a finite clause. OR/OD triggers are such that they require an infinitive as the first verb down; this is shown by the fact that 27a is ungrammatical as soon as the *that* is reached, regardless of what follows.

³⁷ Lasnik & Fiengo (551) take this as an instance of the Tensed Sentence Condition; but see fn. 27 above. (Compare also Hankamer 1971:392 and Postal 1974:244.)

³⁸ Some sentences in English are weak counter-examples to this general pattern, in that they involve OR/OD into a finite, tensed clause, and are not completely unacceptable:

- (a) *?A book like that is tough to claim you've read carefully.*
 (b) *?This rock is too heavy (for you) to claim you can pick up.*

(continue overleaf)

Similar facts can be found throughout the Indo-European languages, both ancient and modern. In Latin, for instance, OR sentences have either the non-finite supine form as the complement (31a)—or more rarely, another non-finite form, the gerund (31b):

- (31) a. *Perfacile factū esse.* (Caesar, *Bel. Gall.* 1.3.6)
 very-easy/NTR do/SUP be
 'It was very easy to do.'
 b. *Quod non modo facile ad credendum est.* (Cic., *Tusc.* 1.78)
 what not only easy/NTR for believe/GER is
 'What is not only easy to believe ...'

In Gothic, the infinitive is always found:

- (32) *ni mahta was ... galeikinon.* (Luke 8:43)
 not possible/FEM.NOM was/3SG heal/INF
 'She could not be healed' (lit., 'She was not possible to heal.')

OD sentences occur in Vedic Sanskrit, for instance, with infinitives (case-forms of verbal nouns) as complements:

- (33) *Gárbham ... drśé cārum dījjanan.* (RV 9.102.6)
 fetus/ACC see/INF lovely/ACC produced/3PL
 '(The gods) have engendered (him) as a fetus, lovely to see ...'

The subordinate-clause verbal forms in these examples lack the characteristics of IE finite verbs, e.g. markings for person and number. Under the assumption that the exclusive occurrence in these languages of such non-finite forms in OR and OD

Similarly, Bach & Horn (272, 286) cite the following OR sentence as fully acceptable (though for me, and for other speakers I have consulted, it is far worse than they indicate):

- (c) *Walter is hard for me to imagine that anyone would look at.*

Without getting into (pointless) discussions about whether a particular sentence deserves a * or a ?? rating, it is nonetheless possible to reconcile these sentences with the clear cases which support 19. In particular, even though these sentences are not completely unacceptable, neither are they wholly well-formed; they contrast fairly clearly with similar sentences which have a non-finite verb in the clause which loses its object:

- (d) *A book like that is tough (for you) to claim to have read carefully.*
 (e) *Walter is hard for me to imagine anyone looking at.*
 (f) *This rock is too heavy for you to claim to be able to pick up.*

Thus it seems that we can recognize a 'canonical' form of OR and OD, such that they cannot freely deprive a finite verb of its object, and can say that other factors can enhance the acceptability of particular sentences which violate this canonical form. In particular, such sentences seem more acceptable only if the material intervening between the main clause and the 'extraction' site is semantically rather empty. If a semantically less-empty predicate is used in sentences like (a)–(c), the results are far worse:

- (g) **A book like that is tough to be really confident (that) you've read carefully.*
 (h) **A book like that is tough to openly admit to your mother (that) you've read carefully.*
 (i) *??Walter is hard for me to imagine that the chorus girls down at the Roxy would seriously want to look at.*
 (j) **That puppy is too cute for you to deny (that) you like.*
 (k) **This rock looks too heavy for you to be absolutely certain that you can lift.*
 (l) **Isn't that candidate too weak for you to publicly declare (that) you will support?*

Thus the real support for 19 from English is the fact that the most NATURAL and normal form of OR/OD sentences involves a non-finite verb in the clause which loses its object.

Some modern IE languages in which the effects of 19 can be seen include French (only OR shown):³⁹

- Also Dutch (only OD shown):⁴⁰

- Further, 35d can be improved by the addition of the object pronoun *ze* in the lowest clause (cf. 30 for a similar phenomenon in English):

- Especially interesting support for 19a comes from Albanian, though it has no real infinitive.⁴¹ Albanian has a process which co-indexes a definite direct object with a clitic pronoun on the verb;⁴² this pronoun copy remains in the complement clause of OR sentences:⁴³

- ³⁹ Thanks to Jessie Pinkham for her help with the French.

⁴⁰ Thanks to Annie Zaenen for her help with the Dutch.

⁴¹ For some information about the situation with the infinitive in Albanian, see Demiraj 1970. Newmark (1957:111) posits the finite/non-finite distinction as relevant for the Albanian verbal system as a whole.

⁴² This suggests that the target NP raised by OR is necessarily definite—cf. the oddness of English ?*A book is hard to read*.

⁴³ This sentence is from Kazazis (1965:88).

The occurrence of such an accusative clitic pronoun can be taken to mean that the finite verb *bějme* in 37 still has an object on the surface, since OR does not wipe out the co-indexed 'trace' (in its non-technical sense) of the complement object.

Other IE languages showing manifestations of these constraints include German,⁴⁴ Spanish,⁴⁵ and the typologically distinct (Classical) Modern Irish.⁴⁶ The fact that 19a-b are operative at such varied diachronic levels within Indo-European is itself an argument for the hypothesis of universality. Only if 19a-b are universals can their appearance in these languages at different time-depths be explained—since the claim that their appearance results solely from the genetic affiliation of these languages requires the additional unmotivated assumption that the constraints were maintained independently in each language, in some cases over long periods of time.

In addition, evidence from unrelated languages can be brought forth in support of the claim of the universality of 19a-b. In Georgian,⁴⁷ the verbal form in the subordinate clause of OR sentences is restricted to a form generally called a 'future participle in the adverbial case'; but Harris (313-24) analyses this as a non-finite form, unmarked for agreement with its subject or object—what she calls an 'infinitive'. Finite verbal forms apparently cannot occur in OR contexts:⁴⁸

- (38) a. *Es gveli znelia moşklavad.*
 this-snake/NOM hard-is/I-2 kill/INF
 'This snake is hard to kill.'
 b. *zneli var dasarçmuneblad.*
 hard am/I-2 convince/INF
 'I am hard to convince.'

Similarly, in Modern Standard Arabic,⁴⁹ although OR sentences are not very common, dictionaries do cite examples:⁵⁰

- (39) *şac̣b-u l-ihtimāl-i*
 difficult/NOM the-bear/VBL.NOUN-GEN
 'difficult to bear' (lit., 'difficult of bearing')

Here the subordinate-clause verb (the verbal noun) shows none of the characteristic markings of Arabic finite verbs, e.g. person, gender, and number of subject, or tense; it thus appears to be non-finite.

In Classical Mongolian, one can find apparent OD sentences:

- (40) *Tariyan qotong-ud-un tari-qui-dur*
 fields Moslem-PL-GEN sow-VBL.NOUN-DAT/LOC
 kürü-lče-kü ügei. (Iledkil Šastir 55v, 2-3)
 reach-MUT.ACT-VBL.NOUN be-not
 'The fields are unsuitable for the Moslems to sow.'

⁴⁴ See Breckenridge 1975 for some details about OR in German.

⁴⁵ This observation comes from Judith Aissen.

⁴⁶ This observation comes from John Armstrong.

⁴⁷ These data are from Harris 1976 (Ch. 4).

⁴⁸ Markings like 'I-2' in the glosses refer to derivational classes of the verb form: different classes govern different case-marking patterns.

⁴⁹ Thanks to Joel Clinnenbeard for bringing these data to my attention.

⁵⁰ For example, Wehr 1971.

Here a non-finite verb, the verbal noun in *-qui*, must appear as the complement clause;⁵¹ this suggests that principle 19b is at work. A similar situation exists in Korean, where OD sentences regularly have the gerundive form of the verb in the complement clause;⁵² tensed verbs, Korean's apparent counterpart to finite verbs, cannot occur in place of the gerundive:

- (41) a. *Mary-nin po-ki-e yepuda.*
 TOPIC see-GRDV-DAT/LOC be-pretty/DECL
 'Mary is pretty to look at.'
- b. **Mary-nin* $\left\{ \begin{array}{l} \textit{ponda/PRES} \\ \textit{poassta/PAST} \\ \textit{polkošita/FUT} \end{array} \right\} (-e) \textit{yepuda.}$

3.4. Thus the over-all evidence shows that significant cross-linguistic generalizations can be made concerning the form that OR and OD sentences may take in a natural language, and 19a-b are aimed at formalizing those generalizations. However, simply positing 19a-b as universals and giving supporting evidence as in §3.2 is not enough; such steps do not answer the basic question of WHY these constraints should exist or WHY they should be universals. Thus it is necessary to provide independent functional and/or perceptual motivation.

Both the OR and the OD universals appear to have a clear functional motivation which could have guided Greek speakers faced with the problem of constructing (or innovating) OR/OD sentences with finite complements.⁵³ Both universals rule out OR/OD sentences in which deep grammatical relations are not transparently encoded in finite-complement clauses. The encoding of deep grammatical relations, i.e. overtly marking the fact that the surface matrix subjects in such sentences are to be interpreted as the logical complement objects, enhances the recoverability of semantic information, and thus aids in the processing of OR/OD sentences with finite complements. The notion of 'finiteness' is important here because finite clauses can be taken to be more complex, i.e. harder to process, than non-finite ones.⁵⁴

For example, Ross 1974 notes that finite and non-finite complements are hierarchically scaled as to their 'restrictiveness of environment', i.e. the degree to which they allow certain syntactic phenomena to work 'into' (or 'out of') them. He claims (117) that the hierarchy is universal: 'non-finite clauses are less restrictive than *that*-clauses [= finite clauses], for all known languages.' Thus the encoding of grammatical relations in finite OR/OD complements through the use of resumptive object pronouns, as guaranteed by the constraints of 19, is actually a reflection of the complexity introduced by finite complementation. This is parallel to the fact, noted by Givón 1973, Cole 1976, and Stahlke 1976, that Relativization into

⁵¹ Mongolian verbs show a distinction between finite verbs, which can occur with the past suffix *-ba(i)* and the non-past suffix *-mui*, and non-finite verbs such as the verbal nouns (cf. Poppe 1954: 89-95 for a description of the Mongolian verbal system).

⁵² Thanks to Young-Ae Choi for her help with the Korean.

⁵³ I would like to thank Talmy Givón for suggesting this functional motivation.

⁵⁴ The notions of psychological or linguistic 'complexity' and of possible processing difficulties may be tied in with the ill-defined concept of 'semantic weight'. In this regard, note that near-acceptable violations of 19 in English involve semantically-empty intervening material (see fn. 38).

'difficult' environments—such as sentential subjects, complex NP's, and co-ordinate structures—typically involves a resumptive-pronoun strategy.⁵⁵

It is important to add, though, that another factor interacts with the restrictiveness hierarchy, namely 'rule (or construction) strength'. Certain rules can operate into (or out of) restrictive environments more easily than others. The point at which a certain construction would require a resumptive pronoun to aid in recoverability of grammatical relations and processing, then, can be different from that of another construction. OR and OD appear to be 'weaker' in this regard than Relativization: OR/OD generally require resumptive pronouns if they are going to affect finite clauses at all, whereas Relativization does not (as noted in §2.3).⁵⁶ This ranking of these rules is confirmed by Ross's observation (1974:116–17) that OR is in general weaker than Topicalization, a rule which shares a number of properties with Relativization and seems to be of equal 'strength' to it.⁵⁷

Why OR/OD should be weaker than Relativization or Topicalization is still, of course, an unanswered question.⁵⁸ However, the recognition of variable rule strength and a hierarchy of restrictiveness for certain complement types, coupled with the functional value of encoding grammatical relations transparently in complex syntactic environments, produces an over-all plausibility for the universals posited in 19, apart from the empirical support they receive (§3.2). These constraints can thus be viewed as attempts to formalize the need in OR/OD sentence types to mark deep grammatical relations overtly in a complex environment like a finite clause, as opposed to the relative freedom with which such marking can be omitted in a less complex environment like a non-finite clause.

The formalization of the constraints is necessary to give them predictive power and make them empirically testable. It will be assumed, then, that the strongest claim—namely that 19a–b are valid linguistic universals, is correct, until counter-evidence is forthcoming which disproves this claim. As such, these principles can be adopted and applied to the developments with OR and OD in Greek.

THE UNIVERSALS AS AN EXPLANATORY DEVICE

4. Given that 19a–b represent (plausible) universal constraints on the range of possible sentences in a language, it is clear how they can be used to account for the changes in Greek. Universals, by definition, hold on ALL natural languages, by

⁵⁵ Cole and Stahlke argue that the Accessibility Hierarchy (AH) of Keenan & Comrie 1977, which stops at clause-internal nominals, should be extended to include extra-clausal, island-like environments such as sentential subjects and complex NP's, at the low end of the hierarchy. Since Keenan & Comrie explicitly claim (88) that the AH 'directly reflects the psychological ease of comprehension', the 'Extended' AH would presumably also correlate with psychological complexity. Non-finite clauses and ordinary finite clauses would seem then to fall in the middle of the Extended AH, before the island-like environments.

⁵⁶ Greek relative clauses can contain resumptive pronouns, but such pronouns are not obligatory for all positions. See Bakker 1974 for details concerning the history of relativization in post-Classical Greek.

⁵⁷ For example, they both operate over an unbounded variable, and both are non-cyclic rules. OR, while involving an unbounded variable in some languages, is generally cyclic.

⁵⁸ There is a suggestive parallel here between rule 'strength' and a division possible in Relational Grammar (Postal & Perlmutter, MS), i.e. between rules affecting CENTRAL grammatical relations (such as OR and OD) and rules creating so-called OVERLAY relations (such as Topicalization and Relativization). But the extent to which this parallel is worth pursuing is not clear.

virtue of their being natural languages; thus they are, in a sense, inviolable. Therefore, as noted above, the introduction of finite complementation in these constructions created a situation in which some additional change was necessary, lest the universals be violated by the occurrence in the language of OR and OD sentences like 13a-b. The direction in which each construction moved, namely to requiring an object pronoun in the finite-complement clause, shows what means the language took to avoid violation of these putative universals. In each case, the resulting form of the construction is in keeping with the principles of 19a-b.

Actually, there are several ways in which Greek could have satisfied the requirements of these universals. In the case of OR, for example, Greek could have given up this construction altogether, so that only non-raised versions of such sentences would be acceptable, i.e. the equivalents of

(42) a. *It was difficult to find the road.*

b. *To find the road was difficult.*⁵⁹

Or, since the constraints in 19 hold only for languages in which the distinction between finite and non-finite forms is valid, Greek presumably could have satisfied them by maintaining OR and OD as before, but by giving up any sort of formal distinction in its verbal system between these two classes of verbs; i.e., sentences like 13a-b would presumably have been acceptable only if the complement verb were no longer distinguished from other verb forms as finite vs. non-finite (by appropriate language-internal tests). Moreover, it would have been possible for speakers of Greek to re-institute the infinitive in the complement clause of OR and OD sentences, returning to the constructions as they were in earlier stages of the language. Thus, conceptually at least, this paradigm for syntactic change, involving the interplay of morphosyntax with linguistic universals, still involves a fair degree of arbitrariness in the outcome of a particular change.

In practice, though, it is hard to imagine that a language like Greek would completely give up the distinction between finite and non-finite forms just for the sake of two construction types, as it were; the preservation of this distinction led to the least disruption in the over-all language system. Nor does it seem likely that speakers, having once innovated in extending finite verbs into a novel construction (in keeping with the general trend in Greek toward replacing infinitives), should have reversed this process, re-instituting infinitives, in just these constructions. In principle, they could have taken either of these measures; but given that finite verbs were encroaching upon the domain of infinitives in these constructions, and assuming that the nature of the universals in 19 meant that something had to 'give' in the syntax, the alterations that did occur in these constructions seem less drastic, relatively speaking, than would the wholesale elimination of a finite/non-finite distinction upon which several generalizations in the language were based. The relatively minor alterations in the OR and OD constructions, then, perhaps represent the most likely outcome in this historical change.

Thus universals in fact limit the directions in which a language can change, but not always to the extent of prescribing a single possible outcome for a particular historical development. There appears to be some latitude as to how languages

⁵⁹ Indeed, OR seems to be of rather low frequency in Modern Greek, impressionistically speaking—especially when compared with the relative productivity and frequency of this construction type in English.

resolve a potential conflict with a given universal principle. Certain language-specific factors undoubtedly play a role in determining which of several possible means a language 'selects' to satisfy a universal. Nonetheless, a recognition of universals leads to a more restrictive theory of syntactic change, in that certain a-priori conceivable changes can be ruled out.

Finally, the question of the validity of the universals must be addressed. It is assumed throughout this section that the evidence and plausibility argument presented in §3 are sufficient to establish 19a-b as valid linguistic universals. However, all proposed universals are only putative, subject to verification again and again as new data are considered. Thus it could well be the case that the principles of 19 are counter-exemplified by the facts of some language not yet considered.⁶⁰ However, even if 19a-b do not represent valid ABSOLUTE universals, a number of languages appear to share a particular form of OR and OD sentence. Thus a significant cross-linguistic generalization can still be made regarding the canonical form of these constructions, even if not all languages adhere to it.

In such a case, the determination of a more frequent (perhaps unmarked) construction type cannot be used to exclude completely a class of syntactic changes as impossible. However, such an observation can help provide a characterization of a 'likely' or 'natural' direction for a syntactic change.

In either case, the study of linguistic universals and of the syntax of varied languages can help in the study of syntactic change. Where no valid universals can be found, the search for the universals may uncover a frequent syntactic type, and so can suggest a likely change. However, where valid universals can be found, they indicate what are and are not possible changes, and thus provide real insights into the ways languages should be able to change.

When such valid universals would be 'activated', so to speak, by a particular morphosyntactic configuration that arises in a language, the syntax must change so as not to violate the universal. When confronted with such an inherited or innovated configuration, speakers construct their syntactic patterns within the limits of this morphosyntax, on the one hand, and the principles of universal grammar, on the other.

Thus languages can change only into possible language types dictated by universal grammar. However, they are not free to move from any possible human language type into another; they must do so within the bounds of the morphosyntactic patterns which they inherit or innovate. The interaction of language-particular morphosyntax with universal grammar places an upper bound on the extent to which the syntax of a language can change over relatively short periods of time.

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⁶⁰ The fact that English provides some sentences that do not strictly adhere to the predictions of 19 (see fn. 38) suggests that they may not be strong candidates for universality. Still, the cross-linguistic similarities would remain.

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