

Andreas L. Katonis

WEAKENING
AND STRENGTHENING
IN GREEK

D.K. STAMOULIS

Andreas L. Katonis,
Weakening and Strengthening in Greek.

D.K. Stamoulis, Athens, 2014.
Original edition.

This book examines consonantal strength movements, a dynamic aspect of phonological processes, like sonorization, lenition, deletion, epenthesis, fortition, etc., in diachronic trajectories, based on Greek material. It is argued that opening of the voiced stops — thought to be the most important case of lenition — is due first, to the universal force of strength processes, and secondly, to the paradigmatic imbalance of Ancient Greek. Such developments seem to be relevant also in certain cases of Proto-Indo-European (PIE), and might be a convenient link between some early and later Indo-European (IE) forms. There is an attempt to find an underlying regularity in such movements. A few non-Greek lemmas are also included to show that neither is the relevance of such movements limited to one language nor should Greek be thought of as isolated with regard to the dynamics of these processes.

Tous droits de traduction, de reproduction et d'adaptation
réservés pour tous les pays.

Copyright © by D.K. Stamoulis, Athens, 2014.
D.K. Stamoulis, Mantzarou 9, GR 10672 Athens.
All rights reserved.

ISBN 978-618-81058-0-5

1. Introduction

1.1. Strength movements and systemic pressure

The two terms indicated in the title are perhaps better known as 'lenition' and 'fortition'. Especially 'lenition' was and still is largely used, due to the fact that it became known mainly in the context of "celtic lenition", replacing the earlier term "celtic aspiration"¹. There are many instances which show the usage with increased scope to cover related phenomena in various languages. As early as 1955, Martinet wrote that lenition possibly occurs in most languages and I would agree to this². He does not seem to have been aware of the contribution of L. Zabrocki who had extended the force of this concept also to Finno-Ugrian languages³. But what is in fact important in Zabrocki's contribution, is that he treats lenition together with fortition, the opposed process, in organic unity⁴. Zabrocki, without expressing himself in this way, applies a method that has been labelled *parametric* or *dynamic phonetics* which views speech as consisting, not of linear sequence of segments, but of a set of articulatory parameters⁵.

1. Cf. e.g. MARTINET, 1955: 257 (11.1)ff., 1981: 192 (6.49)ff., 2005: 182 (6.49)ff.; LASS, 1984: 177 (8.3.1); MIZUTANI, 1986: 259 ("Welsh lenition"), 260, 263; TRASK, 1996: 149 ("fortition"), 201 (s.v. "lenition"), 274 (s.v. "phonological strength"); DIVER (1958) on the other hand, uses the term *weakening* throughout.

2. "Il se peut que le processus de différenciation dont les celtisants décrivent l'aboutissement comme la lénition, ne soit pas aussi exceptionnel que nous pourrions être tentés de croire. [...] Il n'est pas impossible que des recherches ultérieures montrent qu'un processus semblable a caractérisé l'évolution phonologique des langues les plus diverses" (MARTINET, 1955: 291 [11.45]).

3. ZABROCKI, 1951. J. Fourquet gives an assessment of this book in *Bulletin de la Société de linguistique de Paris* 50/2 (1954), 36-41.

4. "La lénition représente le processus inverse par rapport au renforcement (= 'fortition'). [...] | [...] ne sont donc que deux aspects d'un même phénomène." (1951: 257-258).

5. TRASK, 1996: 257; GRIFFEN, 1985: 8ff, see also Index on p. 294. Cf. GRAMMONT, 1933 (197): 144 and 156 ff.

Zabrocki's early insight is perfectly correct. Martinet's contribution to Celtic and Italic linguistics⁶, as well as modern phonology, corroborate the thesis. Several years later, Martinet was fully conscious of the general force of these processes⁷. As to Greek⁸, authors are disappointing. Partial studies exist of course. The results of the "Austrian School", e.g. the writings of G. Drachman and W. Dressler are known. But the important international textbooks show a different picture. Although the classic work by Trubetzkoy, which I prefer to cite in the French translation (Trubetzkoy, 1948), has many Ancient, Medieval (one), and Modern Greek examples, those of Asiatic and other languages there are incomparably more. In 1955, Martinet wrote almost nothing about Greek; in 1981, he had to remark the following: "während der gesamten Entwicklung im Griechischen fand, ausgehend vom obengenannten System, eine allgemeine Schwächung statt", i.e. he finds lenition a general characteristic of this language, repeated in Martinet, 2005: 163⁹. The three Greek examples given by Lass (1984) are unimportant, the very good introduction by Katamba (1989) does not seem to have one single instance, and the other exception to this experience (Foley, 1977), is a synthesis which is generally rejected¹⁰. In the field of *historical linguistics*, still the same picture prevails: Trask, who gives a systematization of *lenition* and *fortition* (1996[b]: 55-60), provides no Greek examples. The one he has (p. 58) is banal, and comes from a very old insight. The neglect is more than surprising not only because Greek is known perhaps as the most suitable (and rewarding) language for any

6. MARTINET, 1950, 1952. See also PILCH, 2001: 91.

7. "Mais on retrouve la lénition un peu partout, en hébreu et en finnois, par exemple." (MARTINET, 1986: 97).

8. In this study, Greek is understood diachronically, as a "vertical" continuum.

9. MARTINET, 1981: 174 (6.14). This, again, is not more than Meillet wrote decades earlier (see in the 8th edition, MEILLET, 1975: 308). While also recognizing fortition for Latin and other languages, owing to this neglect, Martinet misses this process for Greek. He writes a bit more readily about Greek (in the context of weakening) in the first draft on Italic consonantism (1950: 28-29), reshaped in 1955. One would be reluctant to agree with Griffen (1985: 103 [5.3]), when he remarks: "In the histories of many other languages, such as Greek and Spanish, moreover, shifting [on the fortis-lenis scale] occurs in perhaps a more limited degree or scope [...]." The results of the present writer are quite opposite.

10. More forbearingly on Foley, CRAVENS, 1984: 270-276, 1987: 170; COLLINGE, 1985: 245-246; TRASK, 1996: 225 ("modular depotentiation").

kind of linguistic research¹¹ but also because its processes like "spirantization" or the intrusion of an "irrational spirant"¹² have been known for decades now, and sporadically already in the classical antiquity (Katonis, 2010 I: 130-131). Greek, as it seems, is well present in historical linguistics and Indo-European philology, but much less in structural analyses, or in the various domains of speech science. To cite one of the most recent titles in the latter field, the excellent manual by Ladefoged and Maddieson, claiming the "world's languages" and qualified "a boon to all teachers and researchers" (see back cover), ignores Greek, both Ancient and Modern, although mentioning Latin, with the remark "extinct", and also various Indic languages¹³. This is an illogical and inexplicable omission. Special studies also handle phonological topics in a disproportionate manner: although Greek vocalism, in a structural approach, has been relatively well studied, e.g. by Ruipérez, Allen, and Babinotis, the same does not hold true of Greek consonantism. It is revealing that Babinotis, in his historical grammar of Ancient Greek, consecrates 91 pages to the first domain and only 5 to the second¹⁴. One would expect much more in Lejeune's *Phonétique*, the

11. C.J. RUGH, reviewing M. Lejeune's *Phonétique historique du mycénien et du grec ancien* (1972) writes this: "Le grec est probablement le cas le plus favorable parmi les langues du monde pour la vérification des principes de la linguistique diachronique: l'on peut en suivre l'évolution historique à partir de ± 1400 av. J.-C. jusqu'à nos jours, donc pendant plus de trois millénaires, et l'on dispose du témoignage d'un nombre assez élevé de dialectes dès l'époque archaïque (à partir du VI^e siècle av. J.-C.). C'est pourquoi le grec mérite l'intérêt de tous ceux qui s'occupent de la linguistique générale" (1977: 250).

12. This term comes from K. Krumbacher (1886). These are words with a "parasitic" spirant like e.g. "ἀκούγω", "σουλεύγω" etc. The phenomenon is still alive. Ioanna Kappa (University of Crete) cites e.g. the following two verbs from Western Cretan dialect: "xorevyo" /'dance'/, "ravvo" /'sew'/ (4th International Conference on Greek Linguistics, 17-19 September, 1999, Nicosia, Cyprus; hand-out, p. 1). To "ravvo" cf. KRUMBACHER, 1886: 428. As to spirantization, the term "Spirans" — with this phonological implication — is found, among others, throughout in Bechtel's work (e.g. Be D I 11 [8], 230 [10], 330 [14], II 299 [4], 302 [5], 442 [5], 665 [6], 671 [8] etc.).

13. LADEFOGED - MADDIESON, 1996. The book could have mentioned Greek e.g. under the following headings: "Aspiration" (p. 66), "Affricates" (90), "Strength: Fortis vs Lenis Stops" (95-99). P. 1 of the book claims "all the languages of the world".

14. BABINOTIS, 1985: 88-179 and 22-26 respectively. As to vocalism, cf. RUIPÉREZ, "Esquisse d'une histoire du vocalisme grec", *Word* 12 (1956), 67-81; ALLEN, "Some remarks on the structure of Greek vowel systems", *Word* 15 (1959), 240-251. ALLEN, 1987 gives a systemic overview of the Gk vowels (62-103) and a rather long appreciation of the consonants (p. 12-61), but, surprisingly, in no systemic approach.

critiques of which are usually positive¹⁵. But he deals with “spirantization”, essentially, on three pages. The superordinate term he uses (“*relâchement de l’articulation*” [= ‘relaxing/slackening of the articulation’]¹⁶), obviously influenced by Grammont, is purely phonetic and is apparent rather than real. Moreover, he is sceptical about the opening of /d/¹⁷. More in terms of phonology, important for this paper, he approaches the problem of /y/ in Greek (“*affaiblissement*”, “*renforcement*”, etc.), still the systemic spirit is missing, and Ruijgh finds also some other problems in his interpretation¹⁸. So that one is not unjust to the Greek contribution, it must be remarked, that it was G. Babinotis who suggested the topic to this writer for his dissertation published as Katonis (2010) and it was him, who, after a question, suggested the Greek equivalent to “Strength Phonology”. Babinotis, as early as 1972, in his dissertation, showed a great affinity towards *systemic spirit, dynamics* and *pressure*. Although dealing with verbal morphology, he introduces such key concepts as “systemic force” (συστηματική ἰσχύς), “transitional stage” (μεταβατικὸν στάδιον, p. 90), “wrestling forms” (παλαίοντες τύποι, p. 91), “restructuring” (ἀναδόμοις, p. 92), “structural patterns” (σχήματα δομῆς, p. 92) etc. It is him, too, who warns his audience that “such dynamics is to be understood also for other levels of language, such as phonological, semantic and syntactic ones” (“Ἡ λειτουργία ὁμοίων δυναμικῶν δέον νὰ νοηθῇ καὶ ἐπὶ τῶν λοιπῶν ἐπιπέδων τῆς γλώσσας, τοῦ φωνολογικοῦ, τοῦ σημασιολογικοῦ, τοῦ συντακτικοῦ, p. 93). In his *Phonology* (1985) then, he explicitly follows Martinet using such concepts as πληρότητα, “integrated system” (French *intégration*), “symmetry” and “asymmetry” and “push chains” (διαδοχικὲς πιέσεις, pp. 60–61), the famous concept that Martinet formulated as “chaînes de propulsion” and “chaînes de

traction”. With regard to *symmetry* and *integration* he compares the Ancient Greek consonantal system with the Modern one and argues that the second is both symmetrical and integrated, and henceforth also stable (1998c: 126–129, 234; in the previous 1985 edition: pp. 120–126, 183). Last but not least, he returns to these key concepts in his theoretical work, too (1998), such as “economy” (pp. 29, 38, 103, 115, 213), “relative strength of sounds” (σχετική ἰσχύς τῶν φθόγγων, p. 102), “symmetry” and many others. In a number of other publications, this systemic approach reappears, e.g. in Babiniotis, 1992: 36.

Greek is of course not absent in Carvalho et al. (2008) and in Hayes et al. (2008). The first is a stop-gap in the field where a monography of the type Lass (1984) still is missing. As the Index shows (p. 594) Greek is relatively well present although the references do not always indicate the language itself. Honeybone’s introduction (in Carvalho, 2008) gives a good historical survey but it becomes immediately clear that not only the lenition-fortition complex has not been studied in a satisfactorily comprehensive way but the same goes for Greek with regard to this dimension in phonology. Moreover, Honeybone’s survey, although various lenition trajectories are cited (e.g. that of Lass, p. 15), does not operate with a unified terminology Lass has contributed, where *lenition* and *fortition*, happily in my opinion, are subordinated to *weakening* and *strengthening*. Despite references to Greek throughout the book, this language has not been studied systematically by either of the contributions, and not rarely, Greek is only an example introduced with an “e.g.” (like on p. 134) or with the formula “such as” (like on pp. 139, 432, 492). The complex strength relations between the imaginary “ends” of the scales or trajectories, and still more, the nature of the “circuits” in the Martinetian sense may remain hidden for the reader. The second book, with R. Kirchner’s contribution, is similar: Greek is not absent but the examples are either occasional or unimportant. One feels uneasy meeting e.g. Lupaş (1972) on p. 6. Lupaş based her research on a rather arbitrarily chosen, not representative, corpus and the present writer has not comprised her book in his PhD bibliography. Once again, one cannot but agree with Martinet’s working principle. Cf. Katonis, 2009 to this book where also another contribution by Kirchner is being discussed. A third book, that by Barnes (2006), is as disappointing as Ladefoged - Maddieson: Greek is completely ignored. Cser (2003), cited also in Carvalho et al. (2008), gives the picture we meet in modern phonology handbooks: besides Old and Middle Indic, Latin, and other familiar languages, he goes as far as Chagatai, Azerbaijani (p. 62)

15. See e.g. B. NEWTON, *Language* 50 (1974), 738–740.

16. Cf. DIVER, 1958: 3.5 who uses “the weakening of the force of the articulation” in establishing a chronological order of the language, and LASS, 1974: 56 (following Prokosch).

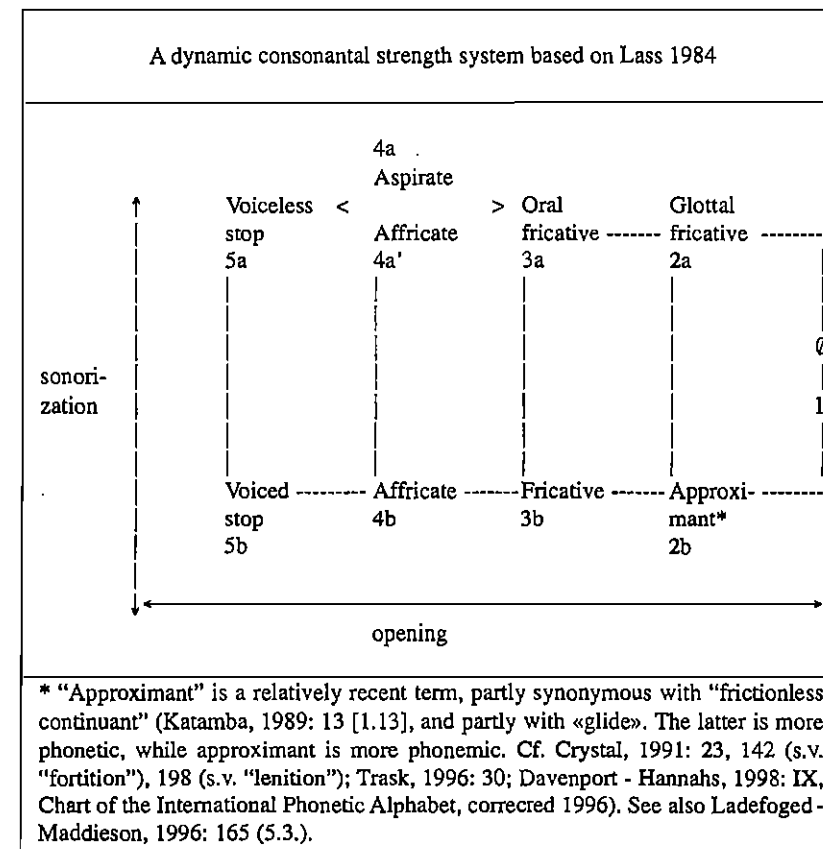
17. LEJEUNE, 1972: 54–56 (42–44); cf. DIVER, 1958: 5. For another critical remark on L., cf. KATONIS, 1999: 473–474. For the term “*relâchement*” cf. GRAMMONT, 1933: 161 (“*relâchement de l’effort musculaire*”) and 170 (“*relâchement de l’articulation*”). It should be added that Grammont’s contribution, in this respect, is much greater than Lejeune’s. On 269ff. Grammont expounds, essentially, what is called today *Strength Phonology*. To the concept of “Strength Phonology”, cf. the recent contribution by Katonis (2009).

18. LEJEUNE, 1972: 165ff. (166ff.). Cf. RUIGH, 1977: 254.

and more, but his Greek examples are few and scattered. This is to be regretted because otherwise his survey is useful. He is aware of the fact that “the notion of lenition or weakening” [involves] “its inverse fortition or strengthening” (p. 121). The principle exactly, the present writer was able to work out based mainly on Greek material. Among Cser’s “unanswered questions” (p. 122), Greek is still missing. Hayes’ *Introductory Phonology* discusses Sonority Hierarchy (2009: 77-78 [4.4.4.]) shortly together with classifying stops, affricates, and fricatives (pp. 78-80) without the same sequencing with four scattered unimportant Greek examples added elsewhere in the book. In some earlier contributions like Kaisse (1993), where the orthography shows that only Modern Greek has been taken into consideration (pp. 348, 357), the complicated “rule-based” language is used (to which W. Dressler remarked that “rules” demonstrate the changes but do not explain them satisfactorily), and the examples, indeed, do not appear important and do not represent a cross-section. Lastly, from a paper having in its title one of our terms as studied in “various languages” (Harrington, 2003) one expects with good reason that Greek is *one* of those languages. But this is not the case: one finds Sardinian, even *raddoppiamento sintattico* and Latin (p. 188), but no Greek examples. I do not believe that Harrington left this language out just because “strengthening” is less studied and understood than “weakening”. Such a one-sided approach contradicts every systemic approach and, by the way, Harrington writes almost three decades after the formulation of the Donegan - Stampe principle discussed in the present paper below. At least a footnote should have complemented the concept of “strengthening”.

The present study aims both to apply structural methods in diachronic phonemics, and to show that such an approach to Greek consonantism within the framework of Strength Phonology¹⁹ (StPh) is possible, and that results can be reckoned with not only for this language

19. For this term see CRAVENS, 1984: 169; DRESSLER, 1985: 35 (3.2.1.2, “consonantal strength”), similarly TRASK, 1996: 274 (“phonological strength”). Cf. also MARTINET, 1955: 37 (1.26), where M. criticizes the “synchronistes”, and 1955: 63 (3.1.), 64 (3.3.), where he is against the “structuralistes” in this sense; similarly MARTINET, 1981: 58 (3.1), 59-60 (3.3). LADEFOGED and MADDIESON consecrate five pages to the phonetic facet of strength and emphasize that this is an important category (1996: 95-919). I would add that the terms “fortis, lenis, strong, weak” (*ibid.*, 98), extended to phonology as “fortition, lenition, strengthening, weakening”, enrich the resources of both terminology and method.



but also for IE philology, and *language* as such. The study also aims at finding the appropriate place of *lenition* (or *weakening*) and *fortition* (or *strengthening*) in a unified phonological strength system as applied to Greek. The survey is based on the PhD of this writer and continues its published version. For methodology, principles, compilation and evaluation of the linguistic Corpus used see Katonis 2010 I: 77ff.

In the phonemic hierarchy of Lass which I am adopting with a few changes for interpreting the processes mentioned in the title, lenition is subordinate to weakening, and opening is subordinate to lenition²⁰.

20. Cf. HAMP: “Babiniotis’ plausible interpretation of β, δ, γ in Macedonian [...] would be a kind of lenition.” (1990-1991: 8).

According to this approach, consonantal weakening, a *natural* type of phonological change, can be defined as a systematic reduction process which affects certain consonants, depending on their position within the word or the phonological phrase. The reduction often results in subsequent deletion. Several strength and other hierarchies exist in phonology²¹ with various degrees of applicability. Opinions about them, too, show a certain scatter between negative and positive evaluations. Recently, positive ones seem to prevail²². In a somewhat curious way it is Lass, who, personally reserved with such scales, has produced perhaps the best Strength Hierarchy which is the Diagram on p. 11²³.

This diagram in fact combines two scales: one of *openness* and one of *sonority* where segments can move from one hierarchy to another. The new hierarchy defines a set of coordinates for strength-changes: down and/or right is lenition, up and/or left is fortition. Input can be made at any point and transfer can occur between sub-hierarchies, more or less at any point. In the question of "skip steps" Lass refers to "ambiguous" evidence and thinks that it is unclear whether such substitutions should be interpreted as processes in themselves or rather relics of former historical processes. It is not clear to me why Lass thinks that the reciprocal of a deletion is not fortition: "The one place, however, from which fortition in the strict sense can't occur is zero: if a deleted segment is replaced by something, this is not a matter of strength any more²⁴." In my view, consonantal epenthesis is of material nature: the new segments "stiffen", "strengthen" the body in which they appear while deletion has the opposite effects in the same, or similar bodies. I think that the data I give below as well as their interpretation demonstrate that the opposite of Lass' idea is true. In any case, even if a consonant, appeared in a process of epenthesis, is a fricative, it may later strengthen to a stop as will be demonstrated below, and as has already been shown by Katonis, 2010 (e.g. I: 164-165).

21. A hierarchy, in this sense, is usually a linear scale along which phonetic or phonological elements are ranked with respect to certain properties.

22. CRYSTAL finds the strength scales "controversial" (1991: 328, 1997: 363, s.v. "strength"), while TRASK, referring to Lass, has nothing against them (1996: 274, s.v. "phonological strength").

23. LASS, 1984: 178 (8.3.1). The diagram has been completed according to Katonis, 2010 I: 147 (cf. *ib.*, 209, the original system). Lass himself, allows for "skip stages" or "skip steps" in his system, the evidence for which he has as "ambiguous" (*ibid.*, 179 [8.3.1]). But the system is not fully elaborated, a problem to which I return below.

24. LASS, 1984: 179 (8.3.1).

Explanation of the terms in the diagram can be found in any modern textbook of phonetics and phonology²⁵, some of them cited also in this paper.

In Greek, the most significant phonological process seems to be the opening of the voiced stops²⁶. Its force has been extended even to the moot question of Ancient Macedonian /β, δ, γ/, yet as far as I know no serious attempts have been made at its interpretation, as shown above in a short survey. The only exception is perhaps that of Babiniotis who drew the attention to the fact that Ancient Greek had an asymmetric phonemic system, deemed logically to change. Such a change is reflected also in the usage of the Ancient Macedonian Mediae. This appeared frequently as a departure from the norm, but in this new interpretation, on the contrary, its Greek character has been confirmed²⁷.

The asymmetrical system, exemplified with the dentals shows the following pattern²⁸:

stops			fricatives
voiceless		voiced	
Tenuis	Aspirata	Media	
t	th	d	-----

25. E.g. KATAMBA, 1989: 6ff. (1.2.1); LADEFOGED - MADDIESON, 1996; DAVENPORT - HANNAHS, 1998: 18ff; for opening see LASS, 1994: 178 ff. (8.3.1).

26. This means the traditional "spirantization" of Ancient Greek stops <β γ δ>, phonetically a pronunciation like [β γ δ]. Since the present paper tries to interpret these processes as *dynamic*, it would be expedient to adapt, as far as possible, both terminology and symbolism to this approach. With this sense "spirantization" appears "static" as compared with "opening", while the phonetic symbols [β γ δ] should be replaced rather by "[b g d]".

27. To my knowledge, the first to propose that Macedonian /β, δ/ (not γ) had a spirantized value, was Steinthal. In his explanation the systemic element is absent: "Wenn überliefert wird, daß die Macedoner δ statt griech. θ, β statt φ gesprochen haben, so heißt dies, daß, während die Griechen ursprüngliches dh zu th, bh zu ph verstoßen hatten, die Macedoner das mediale Element bewahrten, also der Urform treuer blieben. Denn β, δ werden von den späteren Grammatikern doch wohl schon als Aspiraten oder Spiranten genommen sein, so daß β neugriechisches und spanisches b, δ weiches englisches th bedeutet. Die Macedoner haben also höchstens die ursprüngliche mediale Aspirata zur weichen Spirans umgewandelt, während die Griechen die Tenuis aspirata zur harten Aspirata oder Spirans machten" (1863: 404).

Essentially, the methodology of this modern phonemic approach does not differ from that of Martinet's who writes about "stability" and "instability" of phonemic systems, depending on the grade of *integration*, indicating also that a perfect stability is not attainable. The roots of this access lie, of course, in the Prague School Phonology²⁹. I would refer also to Katamba who, unlike Lass, assigns great importance to "phonological symmetry". He remarks that asymmetric systems are possible but occur less commonly than symmetric ones. Instead of "symmetry", in America the synonymous "pattern congruity" is preferred, though King's terminology is more traditional³⁰. In present-day Modern Greek the phonemic situation is the following:

stops		fricatives	
voiceless	voiced	voiceless	voiced
t	d	θ	ð

The distribution is: $t: \theta$, e.g. *ta* / (article, neut., plur.) / - θa / (particle to form future tense) /

d: δ, e.g. *díno* /«dress (verb), clothe»/ - *díno* /«give»/.

28. BABINIOTIS, 1998(b): 128. Concerning the distribution between Ancient and Modern Greek, cf. also BABINIOTIS, 1989: 8-9 (with Italic and Germanic parallels). HAMP (1990-1991) comments on the published version of this text (BABINIOTIS, 1992) *Disproportionate handling of Greek*, again, becomes manifest since PIE obstruent system has frequently been studied from this viewpoint, recently e.g. by Kortlandt, Matasović, Stanley and others. To earlier contributions cf. LEHMANN, 1993: 87 (4.4.3 "skewed system"), 97ff. (5.2.2ff. "infrequency of b", "glottal theory", etc.).

29. TRASK, 1996: 181 (s.v. "integration"), 285-286 ("Prague School"); BABINIOTIS, 1998: 201ff; VACHEK, 1970: 69.

1998: 201ff; VACHEK, 1970: 69.
30. MARTINET, 1955: 86-90 (3.29-34), 1981: 78-82 (3.29-34); KATAMBA, 1989: 25-34 (2.3); KING, 1969: 194 (8.1). For "pattern" and "pattern congruity" cf. HYMAN, 1975: 93-97 (3.4.3); CRYSTAL, 1991: 253; TRASK, 1996: 172 ("hole in the pattern"), 259; DAVENPORT - HANNAHS, 1998: 108-109 (7.4.4). GUSSENHOVEN - JACOBS, 2005: 31-32 (2.5.5.). ZIPP has "patternness" and "patterned", though he prefers the term "configuration" (1935: 188-189; see also 17, 149ff., 240, 302, etc.). To the above picture cf. also Petrounias, 2007: 606-607.

The same applies also to the phonemes /b/ and /v/, /g/ and /ɣ/. Babinotis calls this "completion of symmetry", while others write about "filling in the gaps (= holes)" or, following Martinet, about "integrated system"³¹. In other words: the "old" stops, under the "pressure of the system", became spirants, at the same time "new" stops have developed, and as a result, the whole system shows integrated and symmetrical. It may be noted that Trubetzkoy himself thought that a "tendency to harmony" was working in such cases but his thesis has been criticized and rejected by Martinet as being "misleading" and "teleological"³².

Babiniotis' position is certainly both correct and very convincingly stated. It follows then, first, that Modern Greek should not be thought of so much as «modern» in comparison with Classical Greek, if this attribute means 'new' (cf. e.g. German "*neugriechisch*" or French "*néogrec*"³³): on phonemic grounds a system is not likely to be assymetric for a long time. Secondly, the new phonemic system, as a universal one dating from the Hellenistic epoch at the latest, as could be expected, seems to be more stable than the classical one. Szemerényi remarked aptly that "such phonemes (i.e. those which form an *integrated system*) are very resistant to change"³⁴. But how to show that present-day Greek

31. E.g. MARTINET, 1955: 80 (3.23), 86 (3.28), 1981: 73-74 (3.23) etc., 2005: 59 (3.23), 63 (3.28); KING, 1969: 191 (8.1), 194-195 (8.1), SZEMERÉNYI, 1968: 14; also BABINIOTIS, 1998: 214 (10.3.4). Cf. some early and brief observations on the oppositions in question in TROUBETZKOY, 1948: 162. The frequently cited concept of the "holes in the pattern" belongs, essentially, to the more general one about "paradigmatic imbalance" (TRASK, 1996: 123-124, 172, 255). "Weak spot" used by ARCHISON (1991: 126) is a related term. Stanley writes about "gaps" in IE context (1985: 39, 51). Concerning the distribution, on a theoretical, as well as practical plane, cf. Botinis (2011: 79-81 (4.1.), 86-97 (4.1.2.) where the Ancient Greek consonantal system is being compared to the modern one.

32. MARTINET, 1955: 66-67 (3.4), 97-98 (4.5-6), 1981: 60-61 (3.4), 88-90 (4.5-6). Cf. TROUBETZKOY, 1948: 301 ("loi de l'harmonie vocalique"). It is interesting to find that ZIPP, too, writing at about the same time, detected "harmonic series" in language. He found English "a harmonic language nearly over its whole extent" (1935: 46, 215 (*)). To compare to this concept "pathological language" (*ibid.*, 216).

33. Recently "New Greek" ["NGrK"] in English: EIEC 750.

34. SZEMERÉNYI, 1968: 14. On *stability* see also KING, 1969: 195 (8.1). "Stability" does not mean in this study what is understood usually with this term in modern Autosegmental Phonology (GOLDSMITH, 1990: 27-29). For some reason, the traditional interpretation is missing, too, either in CRYSTAL (1991: 324, 1997: 360) or TRASK (1996: 333). Cf. VACHEK, 1970: 69, and STANLEY, 1985: 40-41 (on "asymmetrical" and "skewed" systems), 52-53 (on "*unstable system*").

phonological system developed organically from the classical or even from an earlier stage? Allen's diagram contrasting Latin and Greek, is both correct and misleading³⁵: the linguistic corpus permits no such beautiful linearity in Greek as to establish a consecutive order of succession in developing the systemic stages like those above, in the phonology of each dialect. It is, nevertheless, almost a commonplace, that one cannot speak about *one* cause of change(s) but rather about (chains of) causes or a causation. (N.b., already Aristotle enumerated four different kinds of causes in his philosophy). Martinet puts causation under various formulations. E.g. speaking about "pressure" he writes: "Là où une seule pression n'aboutit pas, deux pressions conjuguées peuvent aboutir." In 1981, he is even more emphatic. He writes among others: "Man kann nicht oft genug wiederholen [...], daß eine phonologische Veränderung nicht nur eine einzige Ursache hat, sondern daß Druck von allen möglichen Seiten ausgeübt wird³⁶." He then criticizes King on this ground, finding his argumentation for Icelandic and other Germanic languages "daring", and describing as curious the fact that King uses the term "cause" in the singular³⁷. Some years later, once again, Martinet repeated his credo: "il ne s'agit pas, quand on parle de cause et d'effet, d'une cause et d'un effet. Il y a toujours, en réalité, un complexe de causes et un complexe d'effets³⁸." Aitchison, too, rejecting Bloomfield's view about the "unknown" causes of sound change, comments: "In fact, quite a lot is known about causation, and not surprisingly, we must speak of *multicausation*, often within one change³⁹." Phonemics, after all, interpreted — mainly in Zipf's and Martinet's sense — as *dynamic*, seems to be a good device to comprehend the whole span of the ever active continuum of the Greek language⁴⁰.

35. ALLEN, 1987: XV. For a recent attempt at periodization cf. RAU, 2010: 173ff.

36. 1955: 20 (1.10), 1981: 23-24 (1.8). See, in last instance, 2005: 3 (1.5) ff. on "multiplicité des facteurs", "facteurs actifs et passifs", and "rapports dans la chaîne et dans le système".

37. MARTINET, 1981: 19-20 (1.5). For some differences in the two scholars' approach cf. KING, *Language* 43 (1967), 831-852, and KING, 1969: 200-201 (8.2).

38. MARTINET, 1989: 27. MARTINET, 2005: 2-3 (1.4), 4-5 (1.6) etc. writes also on *causalité*.

39. AITCHISON, 1974: 11 (underlining mine). Cf. AITCHISON, 1991: 103ff.

40. It is revealing that ZIPF, as early as 1935, specified a "Dynamic Philology" in the subtitle of his book. He then explains in the Introduction what a "Dynamic Philology" (pp. 3-17), and what the position of a "dynamic philologist" is (pp. 17-18). He

We should now investigate how autonomous factors systemic or structural pressure⁴¹, as seen in Babinotis' approach, and strength movements as proposed in this paper, are, and what their relation is as regards a causation in explaining phonemic processes as well as the birth of a new phonemic system.

The list which follows represents a choice on the basis of a large corpus compiled to interpret the phenomenon of opening in Greek, and selectively also in other languages, aiming to give a possibly universal force to the strength scales. A few non-Greek lemmata are included which either indicate possible Greek developments (like e.g. «Burrum»)⁴² or serve to show that the issue under investigation need not confine itself to Greek material only⁴³. The alphabetic series tries to cover most related stages in the hierarchy. Each entry is given within a carrier phrase as far as this was possible, together with dating and localization, grouped under StPh parameters, the latter based on Lass. The orthography always follows that of the source used. Each time there was a minuscule writing in the source used, this has been preferred, even if there are orthographic differences between majuscule and minuscule redactions. Philological abbreviations follow mostly those of the Liddell - Scott - Jones lexicon for Greek, and of the Oxford Latin Dictionary (ed. P.W.G. Glare et al.) for Latin. Omissions are indicated

returns to Dynamic Philology in the Summary (p. 299ff.). Cf. also DRESSLER, 1985 and MARTINET, 1989.

41. Cf. SZEMERÉNYI, 1968: 15 ("pressure of the system"), 16 ("systemic pressure"). It may be interesting to indicate that this term is quite old. The German equivalent («Systemzwang») was coined by K. Brugmann in 1876 (cf. *Curtius' Studien* 9 [1876], 376, and KNOBLOCH, *Indogermanische Forschungen* 77 [1972], 157 where a letter of Brugmann from 1910 is cited). It is not exact, by the way, what several "mainstream linguists" claim or are claimed to be doing, i.e. that structural approach is only theirs or is the achievement of the 20th century, the classics of 19th c. linguistics being "atomists". Among others, MARTINET insists on this very intensely (e.g. 1989: 26). See LEHMANN, 1993: 76 and 1999: 1. I would add to this a comment of Sievers which recalls modern 'pattern congruity': "Uebergang aus einer Lautklasse in eine andere bereits im System vorgeschene" (1893: 180 [478]).

42. Cf. MEILLET, 1975: 308 and MARTINET, 1981: 174 (6.14, "buxus", "gubernare"). The 8th edition of Meillet's *Aperçu* omits examples i.e., but earlier editions have "burrus", together with others; see below.

43. Examples are taken, for the most part, of a PhD Dissertation, submitted to the Linguistic Seminar of Athens University published as KATONIS 2010. The corpus itself, is based on a card-index file, of an approximatively triple extent as in KATONIS, 2010.

within brackets ("[...]"), although I accept different indications, if any, used in the sources.

With regard to the following survey, one could remark that written tradition and orthography, even if deviating, is not always reliable in establishing a phonetic shape. The *systemic* picture, however, is convincing, and I have included examples also from *living languages*.

2.1. Weakening

5a → 5b /p → b/ /t → d/ /k → g/

- /p/: Burrum⁴⁴ (Πύρρος): 2nd c. B.C.; Rome "Burrum semper Ennius, nunquam Pyrrhum" (Cic. Orat. 160)
 buxus (πύξος): 5th-6th c. A.D.; Constantinople "'buxus' pro 'πύξος' et 'publicus' pro 'puplicus'" (Priscian. Inst I 26; Keil II 2019)
 μπαρντόν ([bar'don] «I beg your pardon»): modern; Modern Greece (colloquial)⁴⁵
 publicus (populus): 5th-6th c. A.D.; Constantinople "'buxus' pro 'πύξος' et 'publicus' pro 'puplicus'" (Priscian. Inst I 26; Keil II 2019)
 /t/: ἀτρέκαδι⁴⁶ (ἀθρέω): 4th c. B.C.; Sillyon (Pamphylia) "Ἡ(ἰ) ἀτρέκαδι (= -αντι = 'ἡθρήκασι')" (DGP 315)
 πράδδοντι⁴⁷ (πράττω): c. 480 B.C.; Gortys (Crete) "αἱ δέ κα μὲ πράδδοντι" (IC IV 80₁₁)
 σαδραπᾶν (σατράπης): 319/7 B.C.; Nesus⁴⁸ (Lesbos) «πὰρ τῶν σαδραπᾶν εἰσαγωγὰ [v | σίτω κα]τεσκεύασσε» (Del.³ 634₁₈)

44. To "*Burrum*" and following "*buxus*" cf. MEILLET, 1975: 308 (without examples), and earlier editions of the same book with more examples; e.g. 1920: 333 (*bur-rus* < πυρρός, *buxus* < πύξος, *gubernare* < κυβερνᾶν). ZIFF, too, mentions *gubernare* < *kubernaō* (1935: 65).

45. Equally exist in modern colloquial Greek the forms [par'don], [bar'don], and [par'don]!

46. < τ > might indicate in this word a strengthening, cf. 2.3.

47. There is a very considerable number of related forms in Cretan material, like "πράττει (IC I, XXIII, I, 36, if not a spelling mistake), πράδδεν (IC IV 80₁₀), π | ράδδεθεθαι (IC IV 72 136-37), πράδεθαι (IC IV 74 D₂), [ἐσπε]ράδδονοι (IC IV 87₁₂)", and also forms like "καταλλάδδεν, διαφυλάδδεν", etc. DIVER, 1958: 22 has the *tt-dd* development a Doric feature.

48. Today *Μοσχονήσι*, east of Lesbos, opposite to ancient Cydoniae (modern *Aivali*).

σαδράνησιν (σατράνης): mid 3rd c. B.C.; Aranda (*Agatsa-Kale*, Armenia Minor) “μνημεῖα παρ’ [...] σαδράνησιν κείσ- | εται” (Papavasiliou 273)⁴⁹

τάμμάδια⁵⁰ (μάτι < ὀμμάτιον): 17th c.; Cyprus “τὰ εἶδα μὲ τάμμάδια μου” (Menardos 453)

/k/: Βάλαγρος (φαλακρός) 296 B.C.; Delos “τότε Βάλαγρος ἦλθεν” (IG XI 2, 154A41)

γλαγγάζει (κλαγγάζω): 5th c. B.C.?; Attica? “γλαγγάζει πτερύσσεται κέκραγε” (Hsch. Γ 213 L)

γλάζει (κλάζω): 5th c. B.C. Attica?; «τὸ σαιτῶ μέλος γλάζει» (Pi. fr.112 [97] Turyn)

pagare [pa'ga:re]⁵¹ (< Lat. pācāre): modern; Italy (*passim*)

5a → 4b⁵² /t → dz

/p/: — — —

/t/: τζετρακάτιαι⁵³ (τετρακόσιοι): 5th c. B.C.; Tegea (Peloponnesos) “Ξουθαί παρκα(τ)θῆκα τῷ Φίλαχα | ἰδ τζετρακάτιαι μναί ἀργυρίδ” (Del. 357 B2 = IG V 2, 15910)

τζιτζικας (< τέτιξ): modern; Modern Greece (*passim*)

/k/: — — —

49. Cf. FR. CUMONT, *Comptes Rendus des Séances. Académie des Inscriptions et Belles Lettres*, 1905: 93, TH. REINACH, *Revue des Études Grecques* 18 (1905) 159-164.

50. < δ > is here, in all probability, the stop [d]. Compare with this form “προῦδα” (= ‘προῦτα’, personal experience in Nicosia, Cyprus, 19 September, 1999).

51. Cf. Spanish *pagar*, phonetically [pa'gar]! Further on, French *payer*, showing /g/ deletion with subsequent /i/ epenthesis. See the remark to *λώγα*. Cf. to this LABORDERIE (2009: 85-86).

52. To “5a → 4b”, “5b → 4b”, “5b → 3b” cf. Hatzidakis and Babinotis, where affricates like /pʰ/, /kʰ/, /tʰ/, and /bʰ/, /dʰ/, /gʰ/ are supposed (HATZIDAKIS, 1924: 128, and BABINOTIS, 1989: 10, 11 (19), respectively). See also Hamp who assumes affricates like /dd/ for prehistoric Albanian (*Historische Sprachforschung* 103, 1990: 292).

53. To “τζετρακάτιαι” and following modern “τζιτζικας” cf. KRUMBACHER, 1886: 443 (“τέτσερα” /‘four’/) and FOY, 1879: 56 with more examples like “τοίκοικας”, “τζι(ν)τζικας” etc. As to the second form, Babinotis thinks that there was an influence of the echoic “τζι τζι” (BABINOTIS, 1998(4): 1784).

5b → 4b /g → dz/⁵⁴

/b/: — — —

/d/: — — —

/g/: -ze-to⁵⁵ (γέντο?): c. 1200 B.C.; Pylos (Messene) “ο-ze-to (= ‘ὁ/ὧς γέντο?’), ke-sa-do-ro” (PY Vn 1301)

SEP = | TUAZINTA (septuaginta): 566 A.D.; Augusta Emerita (*Montijo, Lusitania, Spain*) “FAMVLVS | = DEI VIXIT ANNOS SEP = | TUAZINTA CIN | QV” (IHC 22 a 4-5)

5b → 3b⁵⁶ /b → b/ /d → d/ /g → g/

/b/: ὀβροῦτες (ὀφρῦς): 4th c. B.C.?; Macedonia “ὀβροῦτες: ὀφρῦς [...] Μακεδόνες” (Hsch. A 213 L)

Βάλαγρος (φαλακρός): 296 B.C.; “τότε Βάλαγρος ἦλθεν” (Delos IG XI 2, 154A41)

Βρου- | κίων- | ος⁵⁷ (Φρου-, βροῦκος): 5th c. B.C.; Melos “Τυχα- | ρέτα | Βρου- | κίων- | ος” (IG XII 3, 11403.4)

Βρουκίωνος (Φρου-, βροῦκος): 3rd c. B.C.; Arcesine (Amorgos, Sporades) «τοῦ | κυρίου Βρουκίωνος» (SIG³ 11988 = IG XII 7, 58)

havet⁵⁸ (habeō): 1st c. B.C.?; Rome “sei quis havet nostro conferre dolore(m), | adsit” (CIL I² 12221)

54. Or /g → dz/? See to this a French parallel in LABORDERIE (2009: 81).

55. This is a tentative interpretation based on PALMER, 1963: 370, 440. Cf. the following lemma SEP = | TUAZINTA. Yves Duhoux, having *not* found recent references, informs me in a letter (16.I.2000) that «o-ze-to est d’interprétation très difficile». KAZANSKY, however, explains this form with the verb δίζημαι (1999: 35-38). The recent etymological dictionary by BEEKES (2010: 266, s.v. γέντο) does not mention the Mycenaean form. Old Church Slavonian correspondances to “γέντο”, though not a compulsory proof, show the palatalized /ʒ/. For recent details see *Addendum* on p. 77.

56. Via 4b, i.e. /bʰ/, /dʰ/, /gʰ/ (cf. BABINOTIS, 1989: 10). With LASS’ terminology, this is a “skip step” (1984: 179 [8.3.1]).

57. In majuscule written: < ΙΡΟΥ->. The sign <Ι> is thought to have had the value of a digamma or a spirantized <β> (Buck, 1955: 47 [51.b]).

58. Cf. CIL IX 28286 «QVAE INTIMVS HAVENTES IN PEctore nostro sancimus» (341 A.D.; Buca, *Termoli*, Samnium), and Italian *avere*.

- hēliótai⁵⁹ (ἥλιον): 4th c. B.C.; Sillyon (Pamphylia) “ἀνθρώποισι περὶ(ι) ἥρῃν (= ‘ἀνθρώποις πρὸς εἰρήνην’) ἀ | ταῖσι hēliótai-si» (DGP 37)
- /d/: ádōn (αἰθήρ): 4th c. B.C.?; Macedonia “ádōn: οὐρανός. Μακεδόνες” (Hsch. A 1080 L)
- Ἀρκασιδης⁶⁰ (Ἀρκαδίδης): 5th c. B.C.?; Arcadia “Ἀρκασιδης ὁ Ἀρκάς | ὤφειλε μὲν Ἀρκαδίδης ἀλλὰ διὰ τὸ κακὸφώνον οὕτως ἐγένετο” (Hdn. I 6723)
- ἀνυξοδομίν[ος] (δίδωμι): 5th c. B.C.; Mantinea (Arcadia) “ἅ τε θεὸς κὰς δικασταί, ἀνυξοδομίν[ος] | τῶν κρεμάτων τὸ λάχος” (Del.³ 66119 = IG V 2, 26219)
- δέλλει (βάλλω): 5th c. B.C.?; Arcadia “δέλλει βάλλει” (Hsch. Δ 595 L)
- ζέκ[α] (δέκα): 6th c. B.C.; Phlious (The Argolid) “ἃ ζαμ<ι>α [...] ζέκ[α] μινῶν?” (SEG 11 [1954] 2753)
- ζέκα (δέκα): before 580 c. B.C.; Olympia (Elis) “ζέκα μναῖς κα | ἀποτίνοι Φέκαστος” (Del.³ 4093)
- ζέλλειν (βάλλω): 5th c. B.C.?; Arcadia “ζέλλειν βάλλειν” (Hsch. Z 106 L)
- τόζ’ (ῥόδε): 6th c. B.C.; Kameiros (Rhodos) “σᾶμα τόζ’ (= ‘τόδε’) Ἰδα | μενεὺς ποῖν | σα ἥνα κλέος | εἴη” (Del.³ 2721 = IG XII 1, 737)
- rosa⁶¹ (ῥόδον): 1st c. B.C.; Rome “primus vere rosam atque autumnu carpere poma” (Verg. G. IV 134)
- /g/: ma.la.za.a (= ἄζαλα, ἄγαλα): between 225-218 B.C.; Kafizin (Androklou Oikos, Cyprus) “ἄζαλα τᾶς Θέμι[δος]” (Kafizin 292)
- ἄζαμος (ἄγαμος): 5-4th c. B.C.; Ampelia (Paphos, Cyprus) “ἄζα-μος κατέδου ἵν- -” (Mitford 262)
- βράγος (βράχος? ‘shallows’): 4th c. B.C.?; Macedonia “βράγος ἔλος” (Hsch. B 1027 L)

59. To <ι> see lemma «Βρου- | κίων- | ος».

60. “Ἀρκασιδης”, and following “ἀνυξοδομίν[ος]”: the first <δ> in these words might have been helped, as a «second pressure», by dissimilation.

61. Etymological dictionaries do not recognize opening in this Latin form. Cf. PFIFFIG, 1969: 37 (15). BEEKES (2010: 1290) remarks that Latin *rosa* was probably borrowed from Greek, but the details are unclear.

- Γαιέας (χαίτη): c. 430 B.C.; Athens “[.....¹⁰.....]μαχος, Γαιέας, Καλλίας, [...]” (IG I³ 8965)
- διαραμμα⁶² (διάγραμμα): c. 250-240 B.C.; Ankylon polis (El-Hibeh, Egypt) “ταῖς διαραμμα [...] κα[ι] | ποιήσας[θα] |» (Hib 2472)
- ἐπιθιάνε (θιγγάνω): before 420 B.C.; Kotilion (Phigalia, Arcadia) “εἰ δέ τις ἐπιθιάνε τούτοις” (IG V, 2, 4295 = Del.³ 6735)
- Μειακλῆτης⁶³ (Μεγακλῆς): 3rd-2nd c. B.C.; Aspendos (Pamphylia) “Ἀπελάϊρουίς⁶⁴ Μειακλῆτης” (DGP552)

3b → 165 /b → θ/ /d → θ/ /g → θ/

- /b/: διάολ’ (διάβολος): 17th c. A.D.; Crete ““Ω, διάολ’ ἔπαρέ σε πάλι [...] μὲ τὰ λατινικά σου!” (Vincent E’ 222)
- διάολος (διάβολος): modern; Modern Greece “δουλειά δεν εἶχε ο διάολος” (Babiniotis, 1998(b): 483)
- Ἑλληεροφόντης (Βελληεροφόντης): 4th-3rd c. B.C.?; Alexandria (Egypt) “καὶ ὁ Βελληεροφόντης δέ, φασίν, Ἑλληεροφόντης ἐν τοῖς Ζηνοδότου εὗρηται” (Eust. 289, 38)
- LIBERTAVS (liberta): 2nd c. A.D.; Rome “IULIA ELEYTHE-RIS IVLI MOSCAES L | LIBERTEIS ET LIBERTAVS» (CIL I² II 1, 13309)
- ῥοσκοῦ (βοσκός): modern; Karpathos (Dodekanesos) “ῥοσκοῦ μιντᾶτον [...] ἤτονε καὶ μάντρα τῶν ἀρνῶν” (EDT I p. 41528)
- /d/: δῖει (δίδω [δίδωμι]): modern; Inepolis (*Inembolu*, Asia Minor) “Ο ἀφέντης [...] δῖει τὴν ἄδεια” (Oeconomides 414)
- ἐν (δέν ‘not’): modern; Karpathos (Dodekanesos) “καὶ μῆνας ἐν ἐπέραςε κι ὁ ἄλλος ἐν ἐγιάη”⁶⁶ (EDT I p. 41524)

62. In “διαραμμα”, the following “ἐπιθιάνε”, and “Μειακλῆτης”, the grapheme <ι> is possibly taken as a mis-spelling, from other cases where opening took place normally in an intervocalic environment.

63. Cf. “μέδων” and “Μεαλίνα”.

64. See lemma “Βρου- | κίων- | ος”.

65. A “skip step” (LASS, 1984: 179 [8.3.1]). Instances like “διάολος”, “ροόστερ-μαν” clearly refute Foley’s claim that “in Modern Greek intervocalic γ but not δ or β is elided.” (1977: 32 [5].)

66. “ἐγιάη”, too, has delta /d/ and beta /b/ deletion (= ‘ἐδιάβη’ [διαβαίνω].)

- ἦρροι (ἔρρω): 3rd or 2nd c. B.C.; Gortys (Crete) “αἱ δὲ μὴ ἦρροι” (IC IV 172₁₀)
- ka-ro-pa₃⁶⁷ (κάροπος): 15th c. B.C.; Hagia Triada (Crete) “ka-ro-pa₃” (HT 313, F Series = Packard p. 32)
- ἡῤῥιξ (ἡῤῥιξ): 3rd c. B.C.?; Crete “ἡῤῥιξ· πέρδιξ· Κρηῖτες” (Hsch. Π 2224 S, see also H)
- ροόστεμμαν (ροδόσταμο ‘rose-water’): 14th-15th c. A.D.; Cyprus “ἔναγ· καντήρ· ροόστεμμαν” (EDT I p. 442₂₇)
- Velouemque (Vediouis): 5th c. A.D. or later; Rome “[...] Vedius adiudicari [...] [id est Pluton, quem etiam Ditem Velouemque dixere]”⁶⁸ (Mart. Cap. II 166, p. 69 D)
- /g/: ἄάηη (αγάηη): modern; Karpathos (Dodekanesos) “καὶ συνεπράηημε⁶⁹ [...] τὰ δυό, τὰ δυὸ σὲ μιὰν ἄάηη” (EDT I p. 415₂₃)
- ἀναπα <γ>ομένους (ἄγω): end of 2nd c. B.C.; Tebtynis (Faiyûm, Egypt) “τ[ί]νας τῶν φυλάκων [...] ἀναπα <γ>ομένους” (Teb 264)
- Ἀούστις (Augusta): 2nd c. A.D.; Faiyûm (Egypt) “κλάσσις Ἀούστις Ἀλεξανδρε[ί]νης Λιβύρνου Ἰούππας” (BGU 741₇)
- ἐπι<γ>ονῆς (ἐπιγρονή): 203/2 B.C.; Oxyrhynchus (Egypt) «ἐμίσθωσεν Πολιάνθης Ἰ· Νικάνδρου Μ[α]κεδὼν τῆς ἐ-ῤῥι<γ>ονῆς Θέωνι Ἀπολλωνίου Πέρση” (BGU 12667-8)

67. Like “-ze-to”, “ka-ro-pa₃” is tentative. Together with “ἦρροι” and “ἡῤῥιξ”, see following, (all three Cretan) seems to have the same phonemic process: opening of /d/ with final deletion. «ka-ro-pa₃» is a quasi-bilingual. The syllabograms are placed over the ideogram of a vase. The HT edition gives no transcription. Packard, however, transcribes the word in this way: “KA.RO.PA₃”. With regard to “ἡῤῥιξ”, the recent edition of Hesychius by P.A. Hansen (H) does not contribute new insights, except for bibliographical references which are, in reality, old. One reference is to Frisk’s etymological dictionary (GEW II 511) where further references to SCHWYZER (1939), the other is to THUMB - KIECKERS (1932: 158). Schwyzler clearly argues in favour of a “spirantized” pronunciation of /d/ as *ḍ* with compensatory lengthening (Ersatzdehnung) leading to -ēr- (p. 286). To this we add p. 208 (*ib.*), where a first suggestion for “δ als spirantisches *ḍ*” in “ἡῤῥιξ” is made. THUMB - KIECKERS (1932: 158 [141.20]) gives exactly the same explanation. See also p. 160 (141.27) where the authors argue that ττ was being used in Dorian instead of δδ, because the old δ must have become *ḍ* (cf. ἀντρίων for ἀνδρήων), and a couple like δδ would have been unclear. See also p. 189 (for *ḍ*); and other instances of “spirantized” pronunciation are being discussed on p. 159.

68. See RADKE (1965: 306-310) on this deity. The passage “id ... dixere” is a subsequent interpolation.

69. “συνεπράηημε” is also an instance of gamma deletion.

- εω (ἐγώ): 1612; Kydonia (Crete) “να δω (= ‘ἵνα ἴδω’) καὶ εω⁷⁰ φτωκὼς ὡμὼς (= ‘πιτωκὸς ὁμῶς’) πλο[...]
- EO (ego): 1st c. A.D.?; Carthago (Africa) “DUM . Q. EO | VI-VERI [...] (= ‘dum e[gl]o viver[em]’)” (CIL VIII 13134₂₁)
- ΘΥ<Γ>ΑΤΗΡ (θυγάτηρ): 317/6 B.C.; Attica “ΣΟΝΙΩΣ ΘΥ<Γ>ΑΤΗΡ” (IG II² 7425) Apparatus criticus: “ΟΥΕ lap.”
- io (< Lat. ego): modern; Italy (*passim*)
- ιώνα⁷¹ (ἐγώ): 5th c.; Boeotia “ιώνα (= ‘ἐγῶγε’) ταῦτα πάντα φέρε, πόσου λέγεις;” (Aristoph. Ach. 898)
- ιώνη (ἐγώ): 6th c. B.C.; Tanagra (Boeotia) “μέμφομαι δὲ κὴ λιγούραν Ἰ· Μουριδ⁷² ιώνη (= ‘ἐγῶγε’) δι· βανὰ φοῦ- Ἰ· σ⁷³ ἔβα Πινδάρου πὸρ ἔριν” (Corin. 664 [a]₂ PMG)
- λαοῦ⁷² (λαγός [λαγῶς]): 16th c. A.D.; Cyprus “ἐπέθανεν εἰς τὸ φυγῖον ἐνοῦ λαοῦ” (Sathas Ἀσίζ. A 202₃)
- μεάλην⁷³ (μεγάλος [μέγας]): end of 14th, beginning of 15th c. A.D.; Kyreneia (Cyprus) “βάλλει [...] μὲν φωνὴν μεάλην” (EDT Petr I p. 101₉₄)
- Μεαλίνα (*Μεγαλίνα, μέγας): 2nd c. B.C.?; Aspendos (Pamphylia) “Μεαλίνα Ἰ· Μελανᾶτος” (DGP 44₁)
- ὀλῖαις (ὀλίγος): 343 B.C.; Memphis (Egypt) “ἐν ὀλῖαις ἡμέραις” (UPZ 81 IV 17)
- ὀλιαρχίαι (ὀλιγαρχία): 318/7 B.C.; Athens (Attica) “τὰς δωρεὰς οἱ ἐν ὀλιαρχίαι πολιτευόμενοι” (IG II² 448₆₁)
- ὀλῖοις (ὀλίγος): between 350-300 B.C.; Attica “λέπω πᾶσ[...]⁷⁴ Ἰ· πένθος τ⁷⁵ οὐκ ὀλῖοις” (IG II² 11375₂)
- ὀλίον (ὀλίγος): 4th-3rd c. B.C.; Taras (Magna Graecia) “ὥσπερ Πίνθων [...] Ἰ· [...] ἐν Ἰοβάτῃ κρήνῳ γὰρ ὀλίον μισθὸν [...]” (Hdn. I 141₂₃)
- ὀλλί(ν)ον (ὀλίγος): 15th c. A.D.; Cyprus “Ἀδελφὲ Ἰ· πρίντζη, ἄμε (= ‘πᾶμε’, ‘let’s go’) ὀλλί(ν)ον ἔξω” (Makhairas 266₁₅ D)

70. Cf. “εγω” (*ibid.*, 171₂₁), and Lorentzatos, 1904: 222 (“έώ” without context). N.G. Politis cites this medieval proverb: “Έώ σε ἔκτισα, φοῦρνε, έώ ἵνα σε καλᾶσω / ‘I made you, oven, I have to destroy you!’” (*Byzantinische Zeitschrift* 7, 1898: 154₁).

71. “ιώνα” and following “ιώνη” are supposed to show deletion via the approximant [j] (ESQUIRE calls this a *gliding* [1977: 55]), while <γ>, still present in orthography, must have had the phonetic value of [g].

72. Cf. Karanikolas 424₃ (Syme, modern) “Ἐν ἔκυνῃ λαοῦς κὶ ἀλάφια». «Ἐν» and “ἔκυνῃ” are other instances of /d/ and /g/ deletion.

73. μεάλην and Μεαλίνα: cf. “Μετακλήτης”.

πάω (πηγαίνω, ἄγω): modern; Modern Greece (*passim*)
 στρατη<γ>οὺς (στρατηγός): 118 B.C.; Tebtynis (*Fayûm*, Egypt)
 “μηδὲ τ[ο]ὺς στρατη<γ>οὺς μηδὲ καὶ τοὺς ἐπὶ κρειῶν
 τετα<γ>- | μ[γ]μένους” (Teb 5144)
 ὕδρα[γ]ων (ὕδραγωγός): 2nd-3rd c. A.D. *Fayûm* (Egypt)
 “ῥεῖθρων καὶ ὕδρα[γ]ων” (BGU 9067)
 φάμε (τρώω, φαγ-, subjunctive of ‘eat’): modern; Modern Greece
 (*passim*)
 Φ[ι]αλ[έων] (Φιγαλία): 5th c. B.C.?; Bassae (Arcadia)
 “Φ[ι]αλ[έων] / [Φ]ιαλέ[ων]” (SEG 35 [1985] 345)
 [Φ]ιαλέ[ων] (Φιγαλία): 5th c. B.C.?; Bassae (Arcadia)
 “Φ[ι]αλ[έων] / [Φ]ιαλέ[ων]” (SEG 35 [1985] 345)

2b → 1 /g → 0/

ανοίει (ανοίγω): mid 4th c. A.D.; Alexandria (Egypt) “ἡ παιδία
 κυρίου Κυρίου ανοίγει μου τὰ ὄτα” (Es. L5 Sw) *Apparatus*
criticus: ανοίει N*
 λέει (λέγω): end of 3rd c. A.D.; Oxyrhynchos (Egypt) “λέει
 ‘ὦρι- | ὦν ὁ κλιβανεύς ὅτι ἀγόραρόν (= ‘-σόν’) μοι | [...]”
 τετρώ- βοῶ ἀριγάνου” (Oxy 11429)
 λέει (λέ[γ]ω): modern; Modern Greece (*passim*)
 λείης (λέγω): 4th c. B.C.; Boeotia “Χῆρε κῆ τὺ | νη γάμι | “Ω τί
λείης (= ‘λέγεις’);” (Teyssier 136b)⁷⁴
 Τράϊλος (Τράγιλος): 422/1 B.C.; Acropolis (Athens)
 “Τ Τράϊλος” (IG I³ 1, 77₂₅ = IG I² 64₁₁₅)
 ὕαινης (ὕαινω): 156 B.C.; Memphis (Egypt) “Χαρίζοι<ο>
 δ’ ἄν καὶ τοῦ σώματος | ἐπιμελόμενος, ἴν’ ὕαινης” (UPZ 6414)
 YOIEΣ (ὕγις): 321/20 B.C.; Acropolis (Athens) “[...] οὐχ
ὕ(γ)ίς” ἐκ τοῦ [...]” (IG II² B 1472₃₈, p. 78) *Apparatus criticus*:
YOIEΣ

74. Improved reading of Del.³ 445B.

2.2. Strengthening

1 → 2b /0 → v/ /0 → δ/75 /0 → j/76

/0/: Εὐβάλλης (Εὐάλλης): after 300 B.C.; Sparta (Lacedaemon)
 “Εὐβάλλης Ὀλυμπιονίκας - -]” (IG V 1, 649b)
 Εὔβαν-|δρος (Εὔανδρος): c. 300 B.C.; Dodone (Epirus)
 “Ἐπικοινωνῆται Εὔβαν- | δρος καὶ ἁ γυνὰ τῷ Διεῖ τῷ Νάωι”
 (GDI 1582a_{1,2})
 Εὔβανορος (Εὔανωρ): 2nd c. B.C.; Gytheion (Lacedaemon)
 “Εὔβανορος” (IG V 1, p. 210)
 ὀρούβω (ὀρνυμι, ὀρ[ο]ύω): c. 100 A.D.; Pamphylia (Asia Minor)
 “τοὺς Παμφυλίους ἄλλως καίρειν | τῷ β̄ προτιθέντας αὐτὸ
 παντὸς φωνήεντος [...] | [...] τὸ ὀρούω ὀρούβω | λέγουσιν”
 (Heracl. M. 2616 C)
 ὀρούβω (ὀρνυμι, ὀρ[ο]ύω): c. 100 A.D.; Pamphylia (Asia Minor)
 “καὶ περισπωμένως δὲ ὀρούβω” (Heracl. M. 2616 C)
 /0/: ke-sa-da-ra (*Kassandra*, Κασσάνδρα?): 13th c. B.C.; Pylos (Mes-
 senia) “ke-sa-da-ra GRA 5” (PY Fg 828)
 /0/: ἄνεθλα (ἄθλον): 4th c. B.C.; Sillyon (Pamphylia) “πόλις ἄνεθλα
FEΠETO” (DGP 324)
 Ἀπῆγαν (Ἀπία): 2nd c. B.C.?; Argos (Argolide) “Ἀπῆγαν μέντοι
 ταύτην δοκῶ σε πείσειν τοῦτο δ’ ἦν ὄνομα τῇ γυναικὶ τοῦ
 Νάβιδος” (Plb. 13, 7, 6)
 εκφορηγα (ἐκφόριον): 2nd c. B.C.; Alexandria? (Egypt) “αὐ]των
εκφορηγα” (WP 31 IV₉, p. 186)

75. Tentatively, for systemic reasons, I suggest this interpretation for Mycenaean developments like the above *ke-sa-da-ra* or *ke-sa-do-ro* (PY Vn 130₁). Cf. KATONIS, 2010 I: 137-138.

76. Although /j/ and /γ/ are thought to be allophones, the Strength Scale clearly suggests that the approximant /j/ preceded the fricative /γ/.

77. ≠ Fexetō (BRUXHE, 1976: 183 [23]).

γαίματα⁷⁸ (αἶμα): modern; Pontus (Asia Minor) “τρία γαίματα (= ‘υἱούς’) ἐποίησα (= ‘πεποίηκα’)” (ILNE I 317)

{γ}ένιας (ἐνιος, ἐνιοί): 301-240 B.C.; Ankylōn pólis (*El-Hibeh*, Egypt) “ἡ δύνοντι ἡ ἀναί[έλ-] λοντι, {γ}ένιας δὲ ἐο[ρ-] τὰς ἄγουσιν” (Hib 2753)

Ἐργεὺς⁷⁹ (Ἐριεύς): end of 3rd or beginning 2nd c. B.C.; Tebtynis (Fayūm, Egypt) “Ἐργεὺς Ψεν[---]” (Teb 103929)

ΙΓΕΡΩΝΟΣ (Ἰέρων): 3rd c. B.C.; Athens (Attica) “ΙΓΕΡΩΝΟΣ ΥΠΗΡΕΤΟ[Υ]” (Braun 217, n. 236)

ὀφρύγην⁸⁰ (ὀφρύν): 3rd c. B.C.; Apollonospolis Megale (*Edfou*, Egypt) “[ἐάν τις ὀφρύγην | [παρὰ] ἀλλότριον κω- | [ρίον οἰ]κοδομήι” (Hal 184)

Ταγῆν⁸¹ (Θαυῆς/Ταυῆς): 161 B.C.; Memphis (Egypt) “οἱ ῥμαι τὴν Ταγῆν εὐφονον | οὔσα<ν>” (UPZ 77 I16)

ὕγιναίνης (ὕγιαίνω): 164 B.C.; Memphis (Egypt) “Ἐπιμελόμενος δὲ καὶ σαυ- | τοῦ, ἴν’ ὕγιναίνης, ἔρωσο” (UPZ 110 I19)

1 → 3b /θ → γ/

/θ/: ἀγώλια (ἀωῖλιον): 256/5 B.C.; Philadelphia⁸² (Fayūm, Egypt) “τῶν ὀκτὼ [...] ἡ- | μερῶν ἀγώλια [sic] π” (PSI IV 42311)

78. In Apulia (Italy) there is “γαῖμα” (*ibid.*, ILNE p. 316). Several textbooks mention also — without context — the similar modern “γῖδιος” (= ‘ἱδῖος’), e.g. THUMB, 1964: 324. As to the latter, striking is the phonetically reversed form “τὰ ἱδία” (= ‘τὰ γῖδια’ = αἱ αἶνες, LORENTZATOS, 1904: 222). Couldn’t the Anc. Gk doublet “αἰα-γαῖα”, found *problematic* by all etymological dictionaries, be explained, at least partially, with a similar mechanism? GÜNTERT thought of *Reimwortbildungen* of the type αἰα : γαῖα : γαῖα : μαῖα (1914: 126-127 [189], 219 [343]), but isn’t equally possible to suppose a strengthening here? EIEC 239 has only “αἰα” with the sense of ‘the aunt of foster-mother’ which others tried, not too convincingly, to explain with the semantic coupling “Mother Earth” (cf. Lat. *Terra Mater*). To “Mother Earth” cf. GÜNTERT, 1914: 126 (189), citing Brugmann. See, for the last time I have knowledge of Beekes (2010: 30, 255, 269-270) for αἰα, γαῖα, and γῆ respectively. There is a survey of recent bibliography, but Beekes does not give a solution either.

79. About fifty names of this type exist.

80. Cf. ὀφρύγην (Hsch.).

81. About twenty names of this type exist. Cf. also the name Ταβ[ε]ῖθά /Tabitha/ (*Acts of the Apostles* 9, 36-40).

82. Modern *Kôm el-Charaba el-Kebir*.

ἀγνωῖω⁸³ (ἀγνοέω): 191 A.D.; Karanis⁸⁴ (Fayūm, Egypt) “ἐ- | νῆλθάν τινες, ὧν τὰ ὄνό- | ματα ἀγνωῖω” (BGU 727)

γενορ- | γησαι (γεωργέω): 3rd c. B.C.; Gurob⁸⁵ (Fayūm, Egypt) “ἀμ(πελωνος) ου με- | τεχει γενορ- | γησαι κατα | το δ” (Gurob XVI5-6)

λαγός (λαός): 16th c.; Cyprus⁸⁶ “οὐδὲν ἐντέχεται νὰ τὸ βαστάξουν οἱ ἄνθρωποι [sic] | τοῦ οὐδὲ ὁ λαγός” (Sathas ’Ασίζ. A 377)

1 → 5b /θ → b /θ → d/ (/θ → g/⁸⁷)

/θ/: χαμπλά⁸⁸ (= χαμβλά /‘χαμπλός’/): modern; Thessaly “φέξε ψηλά φέξε χαμπλά”⁸⁹

/θ/: Ἄνδρα⁹⁰ (ἀνὴρ): 8th c. B.C.; Greece (*passim*) “Ἄνδρα μοι ἔν- | νεπε, Μοῦσα, πολύτροπον” (α1)

vendrá (venir): modern; Spain (*passim*)

/θ/: — — —

83. Cf. KATONIS, 2010 I: 164, 179 and II: 198.

84. Modern *Kôm Ushim*.

85. *Medinet el-Ghurob*, anc. *Mi-wer*.

86. For evidence of this form from other Greek islands cf. KRUMBACHER, 1886: 400, and STEPHANOS with several other examples like “ζωγή λαγός προγεστώς” and “ὕποεγραμμένος” respectively (1879: 21).

87. Not attested? More research is needed both for attestation and the interpretation of the processes. See CSER, 2003: 50 (3.4.5) for Spanish, and unanchored /γ/.

88. Cf. Latin *humilis*, French and English *humble*, French *marbre*, English *marble*.

89. No written example found. Detail of a Thessalian - Central-Greek (or “Rumelian”) folk-song with the title “Φέξε μου, φεγγαράκι μου”. I owe this context to the courtesy of Ilias Siatis, folk dancer and dancing-master (personal communication, Gli-fada, Attica, 5 February, 2000). The whole passage runs as follows: “Φέξε μου, φεγγαράκι μου, | νὰ πᾶω στὴν ἀγάπη μου | φέξε ψηλά, φέξε χαμπλά, | γιὰτ’ ἔχει λάσπες καὶ νερά.” Compare the following Cappadocian variant: “Φέξε μου, φεγγαράκι μου, | νὰ πᾶω ’ς τὴν ἀγάπη μου. | [...] | φέξε ψηλά καὶ χαμπλά, | γιὰτ’ ἔχει λάσπαις, νερά.” (G.D. PAKHTIKOS, 260 ΔΗΜΩΔΗ ΕΛΛΗΝΙΚΑ ΑΙΣΜΑΤΑ, ΤΟΜΟΣ Α’, Athens 1905, No. 202-6, p. 25). Remarkable is the gamma epenthesis in “νόγω” (I suppose that this is not a preservation). To “χαμπλά” cf. J. PSICHARI, *Revue des Études Grecques* 28 (1915), 362 (1), and *Id.*, *Quelques travaux*, 1930: 1047 (“χαμπλός”; referring to personal experience: “comme j’ai pu le recueillir de mes propres oreilles sur le Pélion”). For related Thessalic forms cf. DRACHMAN, 1980: 5, and for some related English phenomena, cf. AITCHISON, 1991: 130.

90. Cf. Ω 725 “ἄνερ, ὅν’ αἰῶνος νέος ὦλεο”.

3b → 5b /b → b/ /d → d/ /g → g/

- /b/: μπαμπάκι⁹¹ (βάμβαξ): modern; Modern Greece (*passim*)
 /d/: δῶσ' (δίδωμι): modern; Nikopolis Kolonias (Pontos, Asia Minor)⁹²
 /g/: γαπάω (ἀγαπάω): modern; South Italy⁹³
 γαῖμα (αἶμα): modern; Apulia (Italy)⁹⁴

5b → 5a⁹⁵ /b → p/ /d → t/ /g → k/

- /b/: πασιλι(κῆς) (βασιλικός): 108 B.C.; Tebtynis, *Fayûm* (Egypt)
 "πασιλι(κῆς) [...] γῆς" (Teb 224)
 /d/: ἐτάφου (ἐδάφος): 2nd c. B.C.; Tebtynis, *Fayûm* (Egypt)
 "Θεόδωρος ἀπὸ ἐτάφου (= ἐδάφους) δο(χ.)" (Teb 8587)
 /g/: 'μαστικου<v> (μαστιγώω): 158 B.C.; Memphis (Egypt) "ὑβρίζαν
 με καὶ | 'μαστικου<v> (= ἐμαστίζου)" (UPZ 1240)
 πύρκον (πύργος): end of 14th, beginning of 15th c. A.D.; Kyreneia (Cyprus) "τὸ μονοπάτι ββάλλει πο σ'τῆς Πήσσας τὸν
 πύρκον" (EDT I p. 443⁵⁷)

91. See BABINIOTIS, 1998(4): 351, 1142. I suppose that a process /b → b/ is much more probable than the preservation of an original stop. For a similar change between Sanskrit and Hindi cf. ALLEN, 1965: 29, fn.

92. OECONOMIDES, 1958: 100.

93. HATZIDAKIS, 1892: 126, without context.

94. ILNE I 316, without context. Cf. γαῖμα above.

95. There is a considerable number of "confusions" of the type β~π, δ~τ, γ~κ in the Egyptian material but also elsewhere (see e.g. MAYSER - SCHMOLL, 1970: 143-147 and THREATTE, 1980: 434-439). The explanations do not seem always satisfactory. It is probable that the reason for such changes may be both the substratum influence (in Egypt) and the simple orthographic factor. On systemic grounds I suppose that a large number of the changes is due to strength processes of the kind the present paper investigates.

2.3. Weakening and Strengthening in the same word

ἀπρέκαδι (cf. 2.1 above)

γίει (δίνω [δίδωμι]): modern; Karpathos (Dodekanesos) "γίει (= 'δίδει') μου χρυσοαχτυλῖ⁹⁶ με τὸ μαργαριτάρι" (EDT I p. 415¹³)

Γίω (δίνω [δίδωμι]): modern; Karpathos (Dodekanesos) "Γίω (= 'δίδω') [...] τ' ἀθροὺς τῆς λεμονιάς" (EDT I p. 415¹²)

96. "χρυσσαχτυλῖ" /'gold ring'/ has two more instances of /d/ deletion: χρυσο-[d]αχτυλῖ ([[d]]i).

2.4. Weakening and Strengthening in the same context⁹⁷

εὐλοᾶς (βλο[γ]ῶ [εὐλογῶ]) + παντρεύεις (παντρεύω [<ὀπαν-
δρεύω]): modern; Nisyros (Dodekanesos) "Μάννα, γιατί δὲ
μ' εὐλοᾶς, γιατί δὲ [sic] με παντρεύεις;" (ILNE IV,1:7)
νογῶ (νογῶ [νοόω]) + πναίνου (πηγαίνω [ὀπάγω]): 16th-17th
c.; Crete "οὐδὲ νογῶ τὰ πράματα ἐτοῦτα, πῶς νὰ πναίνου"
(Xanthoudides E 552)⁹⁸
πράτα (πρόβατο [πρόβατον]) + πάγω (πάω [ὀπάγω]): modern;
Epirus, Thessaly "«'Απὸ τὰ πράτα⁹⁹ ἔρχομαι, 'σ τὸ σπῆτί μου
παγαίνω | » πάγω νὰ πάρω τὸ ψωμί, κ' ὀπίσω νὰ γυρίσω.»"
(Fauriel p. 906.7)¹⁰⁰
ἐγύρευα (γυρεύω /'look for'/ γῦρος¹⁰¹ <post-classic>/[γυρός]) +
βοράσω¹⁰² (αγοράζω /'buy'/) + Γοῦλα (δλος) + μεᾶλο[σ] ('με-
γάλος' [μέγας]) + πολλὸ (πολύ): modern; Syme (Dodekanesos)
"ἐνύρευα νὰ βοράσω [...] ἓναδ δαχτυλίδι. [...] Γοῦλα μικρά

97. Cf. also STEPHANOS (1879: 21), without contexts but with this sense.

98. To νογῶ cf. modern vernacular Greek νογάω ('understand, know, be capable of').

99. The development might have been: "πρόβατα > πρόατα > πράτα" (BABINIOTIS, 1998(b): 1480). HATZIDAKIS thinks that the source is the plural genitive: "προάτων > πράτων: πράτα" (1892: 313). Compare a variant from Arachova (Parnassos): "'τὸ τὰ πρόβατ' ἔρχομαι, στὸ σπῆτι μου παγαίνω, | Πάγω νὰ πάρω τὸ ψωμί καὶ πίσω νὰ γυρίσω" (THUMB, 1964: 2169.10).

100. Cf. the variants in Passow: CCCCXXVI₉₋₁₀ (p. 303), CCCCXXIX_{7,8} (p. 305), CCCCXXXI₆ (p. 306).

101. BABINIOTIS does not mention Anc. Gk γυρεύω 'run round in a cycle' as a possible immediate source (1998[b]: 453 s.v.).

102. Cf. to this the inverse Pontic development φόβος > φόος > φόγος (OECONOMIDES, 1958: 127).

μου. Πιάννω πίσω πίσω έναν ἄλλον κι' ἦτο βολλὺ μεάλω. [...]
 ἄς εἶναι καὶ μεάλω σου" (Karanikolas 422 [2])¹⁰³

103. In this three quarters of a page long text I have counted 35 instances of weakening, and 5 of strengthening.

3. Interpretation

"Ἀνάγκη οὖν συνεχές εἶναι καὶ τὸ αὖξον καὶ
 τὸ φθίνον, τῶν δὲ συνεχῶν οὐδέν μεταξὺ" ¹⁰⁴

3.1. Phonological rules as abbreviatory conventions, are usually written in the following form:

$A \rightarrow B/C_D$

In such rules, A is said to be the *affected segment*, B is the *change*, and C and D constitute the *context* or *environment*. CAD constitutes the *structural description* of the rule, and CBD constitutes the *structural change*. The first part of this formalism is called the *rewrite rule* consisting of two sets (a single *structural element* + a *string* of one or more elements), with the *rewrite arrow* between them. Both sets can be, alternatively, also «null sets», thus:

$\emptyset \rightarrow B/C_D$ (interpreted as "insert B between C and D"), and

$A \rightarrow / \emptyset / C_D$ (interpreted as "delete A between C and D")¹⁰⁵.

It follows that all the above lemmata are instances of context-sensitivity¹⁰⁶.

104. Arist. *Phys.* VII, 245a, 15-17 ('Necessarily, then, that which causes growth or shrinkage must be continuous with that upon which it acts; and if things are continuous there is nothing between them'). Text and translation according to the LOEB edition: *Aristotle The Physics* II. With an English translation by Ph.H. Wicksteed and Fr.M. Cornford. Cambridge, Mass. - London, 1968: 226-227.

105. HALLE - CLEMENTS, 1983: 93; CRYSTAL, 1991: 301, 1997: 333 (s.v. "rewrite rule"); LYONS, 1968: 235ff (6.5); HYMAN, 1975: 114 (4.3.1)ff.

106. Cf. HYMAN, 1975: 18 (1.5.3), 147 (5.1.2.2); LASS, 1984: 171 (8.2), and TRASK, 1996: 90.

Although this formalism of phonological rules is used overwhelmingly in synchronic and generative phonology, they may be useful also in historical linguistics. See for an adaptation Trask (1996 [b]: 90-85). More interpretations in Trask (2000: 291-294).

3.2. With the terms of the present paper, the first formalism with the "null set" corresponds to the first case of strengthening, and the second to the final one of weakening. Thus " $\emptyset \rightarrow B/C_D$ " could be applied e.g. to "ἀνεθλᾶ" or "γεγορ- | νησαι" e.g., and " $A \rightarrow \emptyset/C_D$ " to, e.g., "ὀλίον" or "Ἐλλεροφόντης" respectively.

With the introduction of the "null set", the formalisms face an ontological problem of which none of the textbooks or papers consulted by me seems to be aware. The problem is concealed by the terminology itself: "null" or "insert" and "delete" respectively. This is, "insert" something not only *to where* but also *from where*, and "delete" something not only *from where* but also *to where* (think of the conservation of energy or the indestructibility principle of matter in physics). To formulate the question in philosophical terms: creation is not possible *ex nihilo*, and existence cannot be lost *in nihilo*. Lass' diagram, cited above, with the bidirectional movements permitted, might show the way out and its shape might generate, if not even predict, the concept about *circular movements*¹⁰⁷. This recognition, again, could lead to Martinet's principle about linguistic economy¹⁰⁸. "Economy" means, among oth-

107. For circularity cf. e.g. AITCHISON, 1991: 152, 156, 158. LASS (1974), just like LASS (1984) is sceptical (see p. 65) in interpreting Grimm's law and term *Kreislauf*, but he gives a good approach: "The circle is not closed, as Grimm thought, but there is still a cyclical movement [...]." He then proceeds to further search for explanation and interpretation (p. 57).

108. Martinet's revolutionary idea was based on H. Sweet and G. Zipf. See MARTINET, 1955: 43 (2.5), 97 (4.4, "la synthèse des forces en présence"); HYMAN, 1975: 99-100 (4.1, slightly differently); MARTINET, 1981: 39 (2.5), 85 (4.1), 88 (4.4); BABINIOTIS, 1985: 60 (103), Babiniotis 1988: 103 (5.3.6), 243 (5.3.6[3]); cf. MIZUTANI, citing Zipf (1986: 263 [7, "economy"], 271); ZIPP, 1935: 19. In the first formulation of Zipf, "all speech-elements or language-patterns are impelled and directed in their behaviour by a fundamental law of economy in which is the desire to maintain an equi-

ers, a certain distribution between vowels and consonants, a sort of cooperation in which their proportion is complementary: as the number of one component decreases the other increases, and vice versa. In a more general sense, this is "the synthesis of all participating forces"¹⁰⁹.

At this point I would like to cite the view of Maddieson according to which "two tendencies are apparent in the general structure of phonemic systems. First, as the size of a phonemic inventory increases, both the number of consonants and the number of vowels tend to increase. There is no general *tendency* for an enlarged number of consonants to be balanced by a reduced number of vowels; however there are languages which combine large consonant inventories with minimal vowel contrasts (e.g. Northwest Caucasian languages, or the Arandic languages of Australia). Familiarity with these languages has led some linguists to suggest that such a balance is typical. Second, as the number of segments increases, the *proportion* of consonants tends to increase. This may simply reflect the fact that there are more potential dimensions of contrast between consonants of different types than between vowels"¹¹⁰.

The present research, however, and the experience of Greek, has not led to any contradiction or incompatibility with Martinet's theory. The issue might resemble the Foleyan one: to which extent are the postulates and results language-specific or universal? Another objection to the above denial could be that the Greek language, with regard to theoretical phonology, has not been studied satisfactorily¹¹¹.

Martinet's concept of the «structurally motivated pressure in a closed economic circuit» ("*strukturbedingter Druck in einem geschlossenen Kreislauf*", or, to cite the new edition of *Économie*, see fn. "ces pressions s'exercent en circuit fermé, et il est rare qu'on puisse suivre

librium between form and behavior" (Ziff, *ib.*). But Z. prefers the term "equilibrium" to "economy" (see e.g. 297-299, 303 etc.), however, wrongly understood by him (see p. VI-VII, G.A. Miller's Introduction).

109. This is the "economic circuit"; see MARTINET, 1955: 329 (13.6, "*circuit économique*"); MARTINET, 1981: 168 (6.6, "*ökonomischer Kreislauf*"), 219 (7.12, "Man kann also mit strukturbedingtem Druck rechnen. Aber im allgemeinen wird dieser Druck in einem geschlossenen Kreislauf ausgeübt."), 2005: 207-208 (7.12). Cases of a development of consonants to vowels can be traced also in Lass but he does not formulate *expressis verbis* (1984: 180 [8.3.2, A iii, 1]), cf. to this KAISSE, 1992: 322ff. (2.2). See also preceding fn.

110. MADDIESON, 1992: 193. The present writer has not found anything that contradicts Martinet and supports Maddieson. See KATONIS, 2010 I: 150.

111. See introducing remarks (1.1) on LADEFOGED - MADDIESON, 1996 and others.

leur chaîne de la zone des marques au reste du système et vice-versa.») seems especially instructive. This is exactly the principle which prohibits creations *ex nihilo*, and perishing *in nihilo*. It is obvious that not only creation and perishing (i.e. insertion and deletion phonologically) should be considered in the circuit but also the "minor" forms of strengthening and weakening. Important as it is, neither the nature of the circuit is properly elaborated by Martinet, nor the possible proportions and directions of movements. Analyzing e.g. *push chains* and *drag chains*¹¹², he should have arrived at the issue of possible circular movements but this has not happened. One could then ask to which point in a chain "pushing" or "dragging" proceeds, and if both of them "end" somewhere, is this the end of change; and if not, which is obviously the case, what kind of forces carry the movements on, in which direction, and in what conditions?

The reason why Martinet or others have not undertaken something like this is clear: the topic reminds of some basic problems in theoretical physics where measuring is either impossible or has no sense. To do this we would have to examine thousands of word forms and would always face problems natural languages offer: chronology, reliability and arbitrariness of transmission, lack of evidence, etc. It is very impressive e.g. to follow the development "φόβος /phóbos/ > φόβος /fóvos/ > φόος > φόγος" but, as far as I know, there is no more evidence to further trace "φόγος" where, theoretically, a later /g/ and /k/ could be expected. This is possible only "backward" where we arrive at the Indo-European etymology of the word (a supposed root *bhegʷ-, or bʰegʷ-)¹¹³, while with other words we can trace the change /g/ > /k/. Much the same as is the case of "φόβος" seems to be that of Pamphylian *ἄφεθλα > ἄεθλα > ἄνεθλα¹¹⁴, and, on other grades, also "αἶμα > γαῖμα > γαῖμα". Similarly, there is no primary form *θεγός¹¹⁵

112. MARTINET, 1955: 59-62 (2.28-29, "*Chaînes de traction et de propulsion*"), 1981: 54-57 (2.28-29, "*Sag und Schob*"). For the notion of "push chain" and "drag chain" see also SZEMERÉNYI, 1968: 15; KING, 1969: 191 (8.1); LASS, 1984: 127 (7.2); BABINIOTIS, 1985: 61 (10.3); AITCHISON, 1991: 154-159; CRYSTAL, 1991: 52, 1997: 58 (s.v. "chain"); BABINIOTIS, 1998: 215 (10.3.4); TRASK, 1996: 123-124, 297. Babiniotis, in his writings, speaks consistently on "system pressure". This is not illogical: in a systemic approach, a force, whether a *push* or a *drag*, is a *pressure*.

113. GEW II 999, DELG 1184, EIEC 491, BEEKES, 2010: 1564-1565.

114. Cf. BRIKHE, 1976: 183 [Ligne 24].

115. Krumbacher and others mention, without giving context, the dialectal form "θεγός" with epenthetic /y/: KRUMBACHER, 1886: 400; HATZIDAKIS, 1934: 420, 425;

to parallel it with Ancient Greek “*ἁγός/ἁγώς* (< *ἁγῶς*)”, although this word, too, must have had an intervocalic consonant originally¹¹⁶.

Some years ago the present writer was criticised for having superfluously introduced science and principles of physics like that of the conservation or indestructibility of matter into either phonological thought or linguistics. There is a good answer now to this rejection: the joint publication by D. Nanopoulos and G. Babiniotis on “cosmogony and glottogenesis” (see Nanopoulos - Babiniotis, 2010). Their fascinating book finds parallel traits between the material world and human language not only in different levels but also with regard to their creation. In Nanopoulos’ (one of the world’s leading physicists) thinking, although the expanding universe began its existence from a particle smaller than a quark or an electron, still creation *ex nihilo* is *not* to be reckoned with.

Quantum theory, adapted also to brain processes, is a candidate to give explanation. Babiniotis, the leading living linguist in Greece, as this writers remembers well, showed, like most linguists, in his classes some 23 years ago, a non-committal attitude toward the issue of language origin. In his discussion with Nanopoulos, he appears now forbearing. See the challenging chapter «Cosmogony and glottogenesis (in Greek) on pp. 73-80.

All this means that there are important prospects to look ahead. Language origins must not be harmed as was the case with the Linguistic Society of Paris in the second half of the 19th century, and for some hundred years following that. Approaches should be *holistic* ones (*not* in the phonologically synonymous sense of privative theory), as underlined several times in the Nanopoulos - Babiniotis discussion together with *unification* and *interdisciplinarity* (see e.g. pp. 158, 184, 187, 189, 199). *Holism*, anyway, is well known and is present, to cite just one of the recent publications, in the outstanding contribution (labelled so on the back cover) by N. Chomsky (2000). Language is thought there to be a “biological object” (on the back cover) and a “natural object” (on p. 106ff). The book contains a number of philosophical issues, among them *holism* (e.g. p. 46, 152, 186), and quantum theory is not absent

OECONOMIDES, 1958: 127; THUMB, 1964: 331. I have only found the vocative “*Θεγέ*”. This supposes **Θεγός* but social factors may prohibit a nominative like this. Consider the following passage in a 17th c. Cypriot Greek poem: “καὶ τὸν *θεόν* παρακαλοῦν καὶ τὴν γλυκεῖαν παρθένον | «*Θεγέ*, νὰ παῦσῃ ὁ πόλεμος [...]” (Menardos 345-346).

116. EIEC 231 (s.v. “God”). See also DELG 430 and BEEKES, 2010 I: 540.

either (p. 111). The present study is not as ambitious as to arrive at holism but will, perhaps, with its modest possibilities, be able to contribute a few insights in interpreting historical processes in Greek phonology, and to the respective phonological theory.

Before proceeding further I would like to make a short evaluation of relevant data in ancient grammarians. With regard to forms like “*Μεαλίνα*”, “*ὀλίαις*”, “*ὀλίον*”, “*ὕδρα[γ]ωγῶν*” etc., I suppose that they literally reflect a linguistic reality, i.e. deletion; not only because this is predicted by the system here adopted, and not only because in post-classical forms such a reality is manifest but also because there are ancient passages that seem to be supportive of this idea. The famous passage of Herodianus “Πλάτων μέντοι ἐν Ὑπερβόλῃ διέπειξε τὴν ἀνευ τοῦ ᾗ χρῆσιν ὡς βάρ- | βαρον, λέγων οὕτως [...] ὅποτε δ’ εἰπεῖν δέοι | ‘ὀλίγον’, ‘ὀλίον’ [ἔλεγε]”¹¹⁷ is not just an isolated attestation. Apollonius Dyscolus pleads for Beotian forms in this way: “*Βοιωτοὶ <ίῶν>* [...] | *ὕφεσαι* (= ‘with hyphaeresis’)”¹¹⁸ *εὐλόγων* τοῦ ᾗ, ἵνα καὶ τὰ τῆς μεταθέσεως τοῦ *ε* εἰς *ι* γένηται, ἐπεὶ φωνήεντος ἐπιφερομένου τὸ τοιοῦτον παρακολουθεῖ”¹¹⁹. What exactly he means by “*εὐλόγῳ*” we may learn from another section where he uses the cognate verb in a reversed sense: “ὁ στίχος ἠλογεῖτο [verb ‘ἀλογέω’], ὡς ἀκατάλληλον ἔχων τὴν ἀνω- | νυμίαν”¹²⁰. Herodianus went even as far as to label gamma deletion ‘well-proportioned’: “*Ταραντίνοι* χωρὶς τοῦ | ᾗ προφερόμενοι τὴν λέξιν *ἀναλονώτερον* ἀποφαίνονται, ὥσπερ *Ῥίνθων* | ἐν δούλῳ *Μελεάντῳ*”¹²¹. These details suggest that the

117. Hdn. II 926g. See also pp. 141₂₁ (“ὀλοίσιν”), 23 (“ὀλίον”) and 925₂₇₋₂₉ (for the same word forms).

118. Since “*ὕφαισεις*” always refers to vowels I would suggest to recognize the term “*ὕφεις*” as the one which, in a certain sense, corresponds to modern consonant ‘deletion’, and, in this way, to attribute to him one more terminological innovation. This may not be an exaggeration. A.D. was known for his extreme precision and exacting attitude. See LALLOT, 2009: 58.

119. A.D. Pron. 64 B-C, 51s (Schneider [- Uhlig]). The teleology of this text should not engage our attention here.

120. A.D. Comp. 215s (Schneider [- Uhlig]).

121. Hdn. II 925₂₄₋₂₆, cf. I 141₂₀₋₂₁. On both pages, H. remarks that this pronunciation was “*ἀναλονώτερον*” / ‘more proportionate’, ‘more equivalent’. I wonder what exactly this means. Perhaps “more symmetrical”? (We should not forget that H. was the son of Apollonius Dyscolus, the severe “*teknikos*”.) The exact understanding would be of great phonological importance. A recent study dedicated exactly to H.’s analogy (SLUJTER, 2011), does not give a clear answer. Besides morphology as an organizing principle, the main concept of the paper, one might think of a “perfect rational order”,

ancients became aware of deletion, while they were not, or only sporadically¹²² aware of opening. For a more exact interpretation of "ἀναλογώτερον", and "analogy" versus "anomaly" see Blank¹²³. On the other hand, Rix who is not moving beyond "spirantization" does not prove sufficiently in his grammar why "ὀλίος" should be interpreted as [oligos], and why not without any audible consonant¹²⁴.

The chains /lagós/ and /laós/ incorporated in the above list of lemmata, seem to be very appropriate to help in making some important observations and to generalize. Consider the English examples given by Donegan and Stampe, introduced by the following preliminary remarks: "The fortition/lenition distinction, under various names, is a traditional one in diachronic phonetics. Due to its teleological character it has played no systematic role in modern phonology. But it is indispensable in any attempt at explanation, because *almost every phonological process has a corresponding process with exactly opposite effects*." Then they give, among others, the following examples:

sense [sen(t)s] *bans* [bæn(d)s]
cents [sen(t)s] *bands* [bæn(d)s].¹²⁵

a "language-immanent force", a "divine agent responsible" (not infrequent in antiquity!), of "Nature" itself etc. (see pp. 296, 297, 298, 299).

122. Cf. Socrates in Pl. Cra. "ἡ μὲν νέα φωνὴ ἤμιν ἡ καλὴ" and "ὄντι δὲ τοῦ δέλητα ζῆτα, ὥς δὴ μεγαλοπνεύστερα ὄντα" (418b, c). I interpret these passages as examples of Socrates' well-known irony. Cf. e.g. the passage 428d 1-2, and STEINTHAL, 1890: 104. MÉRIDIER (1931), one of the best introductions to Plato's *Cratylus*, explains irony well, and gives a good interpretation of the whole dialogue.

123. BLANK, 1993: 714-715. Cf. what Varro writes about "ἀνὰ λόγον" and "proportione similia esse" (LL X 37 and 42). Some details can be found also in BUBMANN, 1990: 80.

124. RIX, 1976: 83 (93). Cf. MEILLET, 1975: 308-309.

125. DONEGAN - STAMPE, 1979: 143 (2.4, underlining in the quotation is mine). Cf. Drachman's remarks (1980: 4-5), and the examples of ARCHISON (1991: 130). This writer has repeatedly observed in the speech of native English speakers the form [optʃən], instead of [ʊpʃən], for "option", and this is, phonologically, of course the same as German [ʔants], instead of [ʔans], for "eins". The Donegan - Stampe principle seems to have a universal force. See also [hæmpstə(j)] and [prints] for "hamster" and "prince" (McMAHON, 1995: 15, with a phonetically based explanation), and LA-BORDERIE (2009: 77).

In the first case after nasals, before spirants, a stop is inserted homorganic to the nasal and of the same voicing as the spirant. In the second, stops after homorganic nasals before spirants are deleted. Though the environment ("C__D") of the following is not exactly the same, the principle can be applied to Greek material, which would give thus e.g.:

γίδιος (= ἴδιος) ↔ ἴδια (= γίδια = αἶνες, see fn. 78), or

ἀγοράσω > ἄοράσω > ἀβοράσω > βοράσω (see lemma

ἐγύρευα) ↔ φόβος > φόος > φόγος (*ib.*).

Even more instructing appear the following:

/lagós/ (λαγῶς, λαγός) → /lagós/ → /laós/ (see "λαοῦ")

/laós/ (λαός, λεώς) → /lagós/¹²⁶ (see "λαγός") → */lagós/.

The first is a weakening chain: "/lagós/" is the supposed primary pronunciation of the word 'hare' in Ancient Greek; "/lagós/" is the normal pronunciation in Modern Greek¹²⁷. Dialectically the spirantized consonant becomes deleted: "/laós/". Consonantal deletion could be called *full opening*¹²⁸. The second is a strengthening chain: "/laós/" was the normal pronunciation of the word 'people' in classical Ancient Greek, except for Ionic-Attic dialect. With mediæval "/lagós/", development of an "irrational spirant" (i.e. a consonantal epenthesis), there is coincidence with the form having a spirantized (weakened) consonant. The third stage, "*/lagós/", is a hypothetical form: further strengthening is predicted by the system but not evidenced, to my knowledge, by the linguistic material¹²⁹.

126. With /γ/ the anaptyxis of a spirant is meant. Phonetically this is the same as /g/ with which the opening of a stop /g/ is shown.

127. For the notion of "Modern" v.s. See also KATONIS, 2010 I: 89-90.

128. Allen's anti-economic term "*complete assimilation to silence*" (1962: 98) is instructive.

129. Such instances are, however, e.g. "πύρκον" (= 'πύργον') (Cyprus, v.s.), "βάλκουρε" (= 'βάλλομαι'): Ø > γ > g > k (OECONOMIDES, 1958: 316; cf. p. 102), etc. Cf. THUMB, 1964: 12 (10.5) and KAISSE, 1992: 316.

What is the *nature* of the movements seen so far? They might be like linear but in this case they should be characterized (random?) back and forth "shuttle movements". Such movements are not to be excluded but for several reasons, having in mind also the notion about the *economic circuit*, I propose that they show circular. But are these "vicious circles" or are they of some other kind? The concept of circular movements was a commonplace already in classical antiquity. To show this I have chosen a passage which mentions *nature*, so that I can refer to the fact that StPh has much in common with *Natural Phonology*¹³⁰. Polybius' judgement, which follows, is perhaps also in other respects the most pertinent to the purposes of this study: "Αὐτὴ πολιτεῖδ' ἀνακύκλωσις, αὐτὴ φύσεως οἰκονομία, καθ' ἣν μεταβάλλει καὶ μεθίσταται καὶ πάλιν εἰς αὐτὰ καταντῶ τὰ κατὰ τὰς πολιτείας"¹³¹.

Circular movements are well known not only in social sciences but also in linguistics. As to the latter, one of them is the consonantal mutation or '*Lautverschiebung*' (Grimm's Law)¹³², another is the similar AMTA change, supposed for Pelasgo-Hetite in comparison with other IE languages¹³³. Prokosch retained the circular form literally. He simply gives an advanced model of Grimm's *Kreislauf*, while Lass thinks that the circle in Grimm's model is not closed, but he still finds

130. *Natural Phonology* (NPh), of which perhaps DONEGAN - STAMPE (1979) are the most prominent exponents, was elaborated in the 1970s. For details and further reading see HYMAN, 1975: 138ff. ("Phonological Naturalness"), CRYSTAL, 1991: 262, 1997: 291. TRASK, 1996: 236 ("Natural Phonology", "natural process"), 273-274 ("phonological rule", "phonological strength"), more recently DAVENPORT - HANNAHS, 1998: 105ff. ("Phonetic naturalness"); KEATING, 1988: 291 (11.3, "naturalness"), and for the links between NPh and StPh see KATAMBA, 1989: 98-116.

131. /"Such is the cycle of political revolution, the course appointed by nature in which constitutions change, disappear, and finally return to the point from which they started."/ (Pol. VI.9, 10; translation by W.R. Paton, Loeb Classical Library, 1923). Key words are "ἀνακύκλωσις", "φύσις", and "οἰκονομία".

132. LASS, 1974: 57; COLLINGE, 1985: 63-76 (64: "cycle of shifts or *Kreislauf*"), BABINIOTIS, 1985: 50-52 (87), BUSMANN, 1990: 222-224, ARCHISON, 1991: 152, 156. It is not relevant here, if Grimm's Law appears to be challenged by the *bifurcational theory*; the *Kreislauf* still exists either in linguistics or, more generally, in social sciences. See for the "challenge" TRASK (2000: 122-123. 42) for the First Germanic consonant shift, and the bifurcational theory respectively.

133. EIEC p. 13-14 mentions some examples of this kind, without adopting however this term, and labeling the differences "not real". Cf. SZEMERÉNYI, 1996: 17-18 (2.3).

a "cyclical movement" in it¹³⁴. In social sciences, circularity has been retained with an important modification: it really consists of *ascending* cycles, a periodic process which could be called a *spiral movement*. J.G. Droysen, in 1868, remarked that this approach of evolution was quite frequent in his time¹³⁵. The term *spiral movement* could be claimed for also in linguistics, as in one of the most prominent social sciences. Indeed, this has happened. McMahon (1995) considers a *spiral development* as normal and, having on mind morphology, cites Meillet and Lehmann (pp. 165 and 168 respectively). Meillet himself, made this observation with regard to morphology: "Les langues suivent ainsi une sorte de développement en spirale: elles ajoutent des mots accessoires pour obtenir une expression intense; ses mots s'affaiblissent, se dégradent et tombent au niveau de simples outils grammaticaux; on ajoute de nouveaux mots ou des mots différents en vue de l'expression; l'affaiblissement recommence, et ainsi sans fin" (1921: 140-141). Similarly, the German linguist A. Erhart, living in Czechoslovakia, arrived at establishing "circular movements" in morphology, on which cf. Katonis (2010 I: 184, 225). To be added that "affaiblissement" (= 'weakening') is largely used in French also in phonetics and phonology. We could have a look at the word form "γραφτός" as cited by Babiniotis: "*γραφτός > γραπτός > γραφτός"¹³⁶. Graphematically, this is a "vicious circle". But the first form had an IE */p^h/ becoming in classical Greek /p/

134. PROKOSCH, 1939: 51; LASS, 1974: 57. On "Kreislauf", see TRASK (2000: 180).

135. "Denn die historische Betrachtung faßt die Vergangenheit als die rastlose, bis zur Gegenwart, immerhin oft genug in Spiralen sich steigernde Bewegung auf, als kontinuierliche Bewegung in allen Sphären der sittlichen Mächte, als eine große Arbeit, die die Gegenwart weiterzuführen und der Zukunft zu übermitteln den Beruf hat" (DROYSEN, 1937: 267-268). This interpretation was based on Hegel's dialectic doctrine, though H. himself tended to avoid the terms "thesis", "antithesis", "synthesis", and he did not use wordings, either, which later took shape in German as "*Spirale in der Entwicklung*", or simply "*Entwicklungsspirale*", and also "*Spiralentwicklung*". E.g. the expression in Droysen's text "*sittliche Mächte*" strongly reminds of Hegel's "*Sittlichkeit*" /'social ethics'/ Cf. GOLL, 1972: 39-41, where a chapter is consecrated to the history of the "Kreislauftheorie" (with further reading). For the German terms cf. MÜLLER, 1990: 16 (with figure) and 77. See some further (and different) evolutionary implications in CARSTAIRS-McCARTHY (1999: 123-125 [5.2.4], 249-250). Cf. also KATONA, 2001: 378, and KATONIS, 2010 I: 176ff., 210-213.

136. BABINIOTIS, 1985: 40 (74), 1998: 446. B. does not express himself with precision when he writes "π - νόμι - σε φτ" because the two graphemes "φτ" cover different phonetical realities. But with regard to the Modern Greek couple "γραπτός" vs "γραφτός" he is perfectly right.

as result of an *assimilation* (a *strengthening* process in terms of StPh). Modern Greek has /f/ as a result of a *dissimilation* (a *weakening* process in terms of StPh); there never was an /f/ in the classical language¹³⁷. In this way, the cycle is not “perfect”: there is a deviation between its imaginary starting point and its imaginary final point. If we suppose the development in an ascending turn, the last one lies above the first: this is a single coil in a spiral object. Prokosch, too, gives for Germanic, the following development, conceived by him circular: $t > t' > p > \theta > \delta > d > d_0 > t$.¹³⁸

With regard to the preceding I would like to mention that I had the opportunity to discuss with Gaberell Drachman personally, though unfortunately for a very short time¹³⁹. He was sceptical — approximately in the same sense as Drachman 1980 — about the “γραφτός-issue” and maintained that labelings like “spiral” are no more than “poetic allegories” explaining the question with the (Obligatory) Contour Principle (OCP). He then alluded to the “waterfall” phenomenon in the medieval English vowel system where /i/ and /u/ “went down”, asking what the “spiral” was here. (One feels tempted to add that the “waterfall”, the first development in the series of the Great Vowel Shift, at least reminds of being circular). His view on the word-initial deletion reminded that of Foley's¹⁴⁰, and he found “very interesting” when I showed him instances like “*οσκού”, and “*ἐν” (v. *supra*). All this corroborates my conviction that it is very important to work with a *reliable corpus* and to recall to one's mind how right Martinet was when he wrote about “*faits observables*” and “*vérification*”¹⁴¹! The OCP is wide-spread today. It was first developed in detail in the excellent book

137. Cf. the rendering of Gk <φ> as <ph> in Latin. Forms as “NYMFE” (CIL VI 28928a) are extremely rare, while on the other hand, Latin forms like “Iumpa”, “Iumpha”, “nympha” might have had something in common with Gk /p^h/. Cf. the word “νύμφη” respectively (cf. CIL I² 1624, with further literature). See also “ampulla” <*ampor-la <*ampora <*ἄμφορᾱ (RIX, 1976: 85 [95]).

138. 1939: 51 (followed by Grimm's description and Prokosch's arrangement).

139. Linguistic Reading-Room of Athens University (14th January, and 4th February, 2000).

140. 1977: 31 (5). Word-initial position is, by the way considered by Martinet analogous with intervocalic environment. See for the last time, 2005: 183 (6.50, “La lénition à l'initiale”).

141. 1955: 14 (1.4). See also 2005: 16-18 (1.16-17), for a critique against L. Hjelm-slev and the “tours d'ivoire”. One has to “consult the reality”.

by J. Goldsmith¹⁴². I am sceptical, however, about such explanations. Such synchronic suggestions should be integrated into diachrony. I would ask what is explained in diachronic questions by synchronic methods of the kind? The two approaches should — in *organic* unity — serve the linguistic body, *continuous* not only “horizontally” but also “vertically”. More than forty years ago Szemerényi who often criticized Saussure, his “non-book”, and the “unfortunate schism”, wrote the following (which is also a defence of Martinet): “Saussure's insistence on a strict separation of synchronic and diachronic studies [...] could have brought *instance disaster* [...]. Martinet's *Economie* [...] is a landmark on the road towards a fruitful integration of the two methodologies [...]”¹⁴³. One cannot but welcome this position. As to the spiral form, I try to show here and in the following, only that this seems to be the most general shape of evolution. As to language evolution, I am not alone. See Lewandowska-Tomaszczyk who, following Laszlo's model found in his system philosophy, develops a spatial spiral model of language development. She also emphasizes *dynamism* and *naturalness*¹⁴⁴.

Of course I admit that just like social movements where there is a tremendous variety between individual reactions and the most general trends of historical change, in linguistic reality, too, there is a high degree scatter on the scale from the very subtle and intrinsic developments to the grand topics language change is able to span.

In Mycenaean Greek, the word “λαός” shows a bilabial approximant, i.e. the digamma: “ra-wa-ke-ta” and “ra-wa-ke-si-jo”¹⁴⁵. The term designates the *lawagetas*, the commander-in-chief of the ‘people under arms’ (this is the original meaning of λαός). How could the digamma be explained? According to the dictionaries, the etymology of

142. 1990: 309-318. One of the first formulations is to be found in KATAMBA (1989: 193-194 [10.3.1]) where it is remarked that the principle applies not only to tone but also to other tiers. Crystal (1997: 267) extends the validity of OCP to vowel insertion, too superficially I'm afraid. Then, a better survey has been given by GUSSENHOVEN - JACOBS (2005: 31 (2, 5.4), 129-134 (9.6-9.7)). Cf. TRASK, 1996: 245, with further literature.

143. SZEMERÉNYI, 1972: 120 (6), italics mine.

144. 1992: 229-230, 233, 235, 236, 244, 246. E. Laszlo's *Introduction to System Philosophy* [non vidi], was published in New York in the late sixties by Harper. See KATONIS, 2010 I: 211.

145. PY Un 718.9: “to-so-de, ra-wa-ke-ta, do-se”, PY Er 312.3: “ra-wa-ke-si-jo, te-me-no GRA 10”. Cf. Pindaric “λαγέτας”.

this word is problematic¹⁴⁶. It might be a loanword in Greek. The most probable link seems to be that with Hittite *lahḫa*-meaning 'war' or 'campaign'. This could also explain the Greek meaning 'people under arms'. As IE root, **l̥ē(i)-* might be reckoned with (cf. Gk "λεῖα"). The root seems to mean 'gain', 'get', 'acquire'¹⁴⁷. The Hittite form as well as the long /ā/ in Gk "λαός" (cf. Ionic "ἄνός") render possible that the root once ended on a laryngeal¹⁴⁸. This is the first tangible case where an intervocalic consonant¹⁴⁹ was deleted (a case of *weakening*). In terms of StPh the following digamma could be conceived as epenthetic (a case of *strengthening*). Deletion of the digamma in classical Greek is interpreted again as weakening, and medieval λαγός is, again, a strengthening. The string /l̥Hōs/ → /laós/ → /lawós/ → /laós/ → /layós/, beginning with IE and ending with Medieval Gk, and the alternation weakening~strengthening may seem strange at first sight. This is not even a drag- or push-chain. I should, however, remark that this is not exactly a mechanical zig-zag, or better a pendulum¹⁵⁰ movement, either, though something like this, too, would accord with the *dynamic* nature of language¹⁵¹, but rather a succession with another alternating element in the same environment each time. This interpretation would also render unnecessary the remark "The derivative **leh₂uós* [...] would appear to be regionally restricted to Greek and Phrygian"¹⁵². The remark itself is perhaps not correct. There are many other non-Greek and non-Phrygian forms with an intervocalic -v-; like e.g., if not an Etruscan word, *Lav-erna*, the Roman goddess of theft¹⁵³. It is also remarkable that the result

146. DELG 612, GEW II 83, BABINIOTIS, 1998(b): 996; cf. also WP II 379 (2) and EIEC 31.631. BEEKES (2010 I: 832-833), as so often, is sceptical.

147. German *Krieg* and *kriegen* come near semantically: the verb means 'get', and secondly 'wage a war'; the noun means only 'war'. However, BEEKES (2010: 833) thinks that *λεῖα* is not related, and the form *laós* is rather Pre-Greek.

148. EIEC 31 has **leh₂uós* for IE (PIE **leh₂-*) and *lahḫa-* for Hittite. This should be, more correctly, *lahḫa-*, a noun with common gender, meaning 'campaign, trip' (HOFFNER - MELCHERT, 2008 I: 52 [2.6], 2: 59).

149. The laryngeal is supposed to have been a consonant, see BAMESBERGER, 1989: 40 (16), SZEMERÉNYI, 1996: 140 (6.6.10). Cf. also WOODHOUSE, 1998: 65 (10).

150. For this term cf. DRACHMAN, 1980: 10.

151. This seems to happen actually with "ὀλίγος" vs. "ὀλιός", and in the case of "ὀνάγω", "νάω", and "νάγω", v.s.

152. EIEC 31 (s.v. «Army»; the Phrygian form is considered a borrowing from Greek).

153. Cf. MANN, 1984: 667 with more examples (s.v. "*lāuōs*"; see also "*layō*", *ibid.*). See several other examples also in WP II 379-80 (s.v. "*lāu-*"). In the case of "*Laverna*",

of the epenthesis is each time a spirant, not a stop¹⁵⁴. The development of a spirant is well understood in StPh (as e.g. that of the "irrational spirant"), while a further development, e.g. /k/ — as foreseen in the system —, which would then break the alternating succession, might be prohibited by social factors¹⁵⁵. "Shuttle-movements" are not at all unknown in linguistics. Martinet (1955) posits such movements very clearly for several IE dialects¹⁵⁶, while in the original English paper on Italic consonantism (1950), he writes about a "general weakening" followed by a "general strengthening"¹⁵⁷. Thinking "vertically" about *linguistic continuum*, nothing prohibits, on principle, extending the validity of such movements also to stages prior to Greek: a "general weakening" presupposes a "general strengthening", or at least, an "initial" "strong" condition left behind. I will return to the idea below. Martinet gives the label of "seesawing" to this type of movements¹⁵⁸. The string

rather the ending *-erna* only could be Etruscan. (Cf. such Latin words as *laterna*, and names as *Perperna*, and Etruscan names such as *θucernas* [TLE 546] and *Laθerna* [TLE 119]).

154. Cf. the tentative suggestion for a possible Mycenaean process /θ/ → δ/ above (2.2), and a remark on "Ανδρα" below. See further KATONIS, 2010 I: 135-136.

155. The word is "too" important, just like the verb "λέ(γ)ω" where forms like "λω", "λες", "λεν" exist in modern dialects, partly also in the everyday language, without, however, a clear breakthrough. Especially, from a form like "λω" / = "λέ(γ)ω"/, there would be not any "return" possible.

156. "J. Fourquet a clairement démontré que plusieurs groupes de langues indo-européennes ont été, à date ancienne, affectés par un affaiblissement général de l'articulation des consonnes. [...] Plus tard, la tendance a été renversée en germanique, et des articulations, précédemment relâchées, se sont raffermies. Nous avons, à la suite de Fourquet, cherché à retrouver, en italique, la même succession d'un affaiblissement général suivi d'un renforcement également général [...] nous dirons qu'on constate, dans l'évolution de certains dialectes indo-européennes, l'action d'une tendance au relâchement des articulations consonantiques, et celle, ultérieure, d'une tendance à les affermir" (MARTINET, 1955: 328 [13.4], and 1981: 167 [6.4] in German).

157. MARTINET, 1950: 28, 29, 31, 35, etc.

158. "*Mouvements de bascule*", "*coups de bascule*" (1955: 134 [4.57], 328 [13.4]), 1981: 122 (4.57, "*Schaukelbewegungen*"), 167 (6.4, "*Wellenbewegungen*"). Cf. DIVER, 1958: 3, already mentioned in the Introduction. I have found in Prokosch *strengthening*, conceived phonetically, but there is no reference to strengthening-weakening in this sense (1939: 53, 54 ["tension"], 92). It is impressing that MARTINET, in the 2005 edition, not only repeats himself with regard to Fourquet, but repeats also his old position on *social development*: "L'histoire politique nous est toujours présentée comme une succession sans fin de grandeurs et de décadences, et il paraît naturel de retrouver, dans l'histoire linguistique, les mêmes alternances de vigueur et de langueur" (157 [6.4]).

“/ΛHós/ → /laós/ → /lawós/ → /laós/ → /layós/” is, however, a “combined” seesawing. It yields each time a new phoneme, being in an opposite place, compared with that of the previous. If the laryngial, too, supposed consonantal, may be considered as epenthetic, the slowly prevailing weakening-strengthening circle would be perfect¹⁵⁹. It can not be answered here if the narrowing shape, reminding of a cone, is contingent. For this, more forms after “/layós/” would be needed. The stages, in any case, seem to follow some (diachronically) underlying rule. The other string is lesser and simpler: /laós/ → /layós/ → */lagós/.

The first string consists of small strings with (perceptible) movements each time “to the right”, the second is a string “to the left”. These results conform to the following insight: movements to the right are thought to be “more natural”. Such “natural” successions were put forward already by Martinet¹⁶⁰. Lass thinks that movements “down” and “to the right” (i.e. weakening movements) are “more natural” than the opposite strengthening ones, which, he admits, exist, too¹⁶¹. It should be left to further investigation what the relation of this assumption is, as compared to the Donegan - Stampe Precedence Principle according to which fortitions always precede lenitions¹⁶². The two strings, with their parameters, might be thought of also as having an additional symbolic value. They would symbolize, first of all, linguistic change (the dynamic nature of language) very well, secondly, the functioning of strength movements, thirdly the spiral form of these changes, and fourthly the fact that such changes may happen at the same time also as “opposite” ones: the circles seem to be independent. Accordingly, Hatzidakis was not right when he wrote that once a /g/ dropped, it was not possible to have it again, as occurs in many instances of spoken Gk,

159. Windekens' idea, *Flāfós > *lāfós for Greek, and IE *y/- with *-ā-extension, meaning ‘mass’, ‘band’, perhaps does not contradict my interpretation (WINDEKENS, 1986: 139).

160. MARTINET, 1955: 76 (3.16), 1981: 69 (3.16), 2005: 55 (3.16, “de gauche à droite”).

161. 1984: 178 (8.3.1). This was, of course, maintained long before him, cf. e.g. HYMAN, 1975: 178 (5.2.7). Hyman's thorough introduction has all the important previous literature.

162. DONEGAN - STAMPE, 1979: 153-158 (3.2.1); cf. DRACHMAN, 1980: 3-5. If StPh processes are confined only to consonants, Gk examples seem sometimes to support this assumption; like Modern Greek “μωπέ”, “(β)πε” /both ‘hey you’ and ‘well’; ‘just’/ in this development: /moré/ → /mré/ → /mbré/ → /θbré/ → /vré/ → /θré/.

proposing an analogical explanation for each case¹⁶³. Dropping-developing is well possible. One explanation of the cases like “ὀλίγος” versus “ὀλίος” in Ancient, and “(ο)λίγος” in Modern Greek could be that deletion may not have been universal just like in present day Spanish e.g., while preceding opening took place everywhere quite surely. But for cases where deletion took place, nothing prohibits one from assuming that a reappearance is possible. In such cases, if vowel qualities did not change, immediately a reversed mechanism could start. With the traditional terminology, the environment was simply a *hiatus*¹⁶⁴. There is considerable evidence that a hiatus is unstable: either the vowels undergo changes or a consonant appears to remove it. It is impressing that already Apollonius Dyscolus understood this mechanism when he wrote: “σαφές ὅτι τὸ κασμῶδες τῶν φωνέντων ἀναπληροῦν [sc. ὁ ποιητής] τῇ τοῦ ὕ προσθέσει”. He is, by the way, who coined our term in the form of “κασμῶδες”¹⁶⁵.

In the instance above, “πάγω νὰ πάω τὸ ψωμί”, a reappearance of the gamma is much more likely than its continuous retention (cf. e.g. “ἀναπλ<γ>ομένους” in a 2nd c. B.C. text, and “πάω” /‘I go’/ in current Greek usage). Donegan and Stampe write that the causalities of the fortition and lenition processes (and consequently also those of strengthening and weakening) are *opposite*, reflecting respectively the

163. 1899: 162. Hatzidakis (1892: 118-134) gives a large and very useful overview of the gamma deletion and epenthesis. The rich material could have led him to insights similar to those here dealt with — he does not ignore hiatus removing either (e.g. p. 123) — but this was not the case. Analysing some similar processes, he admits not to be able to find an explanation: “was ich nicht zu erklären vermag” (p. 122).

164. Cf. TRASK, 1996: 170; DRACHMAN (1980: 10-11) expresses some doubts as to lenition processes compensated for by fortitions or other processes.

165. A.D. Pron. 63 B, I.1, p. 15722-24, Schneider - Uhlig. It is surprising that for A.D., *conjunctions* are “sounds”, but much less that removing the “void” (the hiatus) was thought for him to be the driving force. Cf. EGGER, 1987: 205ff. (“remplir les vides”, 206) on this terminology and on the respective passages in A.D., who was also known for his inclination towards terminological innovations (cf. KATONIS, 2010 I: 42 [1.3.5.]). The Alexandrian A.D., a “difficult” teacher and writer, a “tekhnikos”, seems to have been much more important than posterity generally assumes. He even may have foreseen the concept of modern Deep Structure. See a recent interpretation by LALLOT (2009, with bibliography) who thinks that “A.’s vast work awaits still deeper analysis and evaluation”. A.’s son, Herodianus, was equally a not unimportant grammarian.

clarity versus ease principle of traditional phonology¹⁶⁶. In this approach, Krumbacher's "irrational spirant" appears not to be so much "irrational". It has its part in linguistic evolution, and there is not only a /ɣ/ in question, though this is more frequent. Analogy, too, is certainly never to be excluded. It could and can always work as a second pressure (a "*pression conjuguée*" with Martinet's term). Reappearance could be conceived as the beginning coil of a potential spiral, the continuation of which depends on a large scale of factors. The opposite of a reappearance, more exactly an independently repeated deletion could be observed in the 17th c. "εω" as opposed to ancient Boiotian "ἰώγα". It is unthinkable that the first would continue the latter the fate of which must have been bound with that of the dialect. The nasal, again, in Corinna's "ἰώνυ", might perhaps be assumed as not necessarily analogous with /n/-in "ἔγών"; it could be a weakening case (compare to it "ἰώγα"), like that of "Ἀρύμβας" and "μαγκούρα" to be analysed here below.

It is obvious that this survey confines itself to indicating the possibility of a potentially new dimension of language change. The suggestion is tentative, and the exact nature of the various developing cycles, their range, depth, and movement conditions need further investigation. It should be remarked that Lass' diagram must be further developed. It does not consider, e.g., nasals. With this system, word forms already Hatzidakis hinted at, like "Ἀρύμβας"¹⁶⁷, can not be explained. Yet, in a different context, Mizutani gives this very simple phonetic-based explanation: "when the nasal passage is opened, no matter how constant the amount of air from the lungs is, the internal pressure in the area of the oral cavity can not be heightened. In other words, the pressure can be weakened by opening the nasal passage, the other articulatory parameters being unchanged"¹⁶⁸. This means that a change -bb- > -mb-, is a quite natural case of weakening¹⁶⁹.

166. 1979: 143 (2.4). Dressler analyzes both the two notions, and the contribution by DONEGAN - STAMPE (1985: 43ff. (4.3.3.1 ff.), cf. p. 41ff. To the "ease of articulation" cf. HYMAN, 1975: 98 (3.4.4); LASS, 1984: 199 (8.6); TRASK, 1996: 126.

167. I.e. 'Ἀρύμβας'. It occurs e.g. in a 4th c. B.C. Attic inscription (IG II² 10850). Cf. HATZIDAKIS, 1924: 123. See KATONIS (2010 I: 156 and II: 26) for examples and tentative interpretation.

168. MIZUTANI, 1986: 262 (4.3).

169. In the same way would e.g. Modern Greek "μαγκούρα" [ma'ɣura] /'stick, crook'/ be explained. Cf. "μαγκούρα" (Hsch.).

Rudolf Wachter, in one of the last classes of the Indo-European Summer School sessions in Berlin that ended in 2013, lecturing on inscriptions and alphabets, gave his audience some early (550-530 B.C.) and enigmatic name forms, such as "Τλημπόλεμος" (= Τληπόλεμος), "Τληνπόλεμος", "Νεοντόλεμος" etc., all of them on Attic vases (AVI 720.2089.2227.2439+). Some of these names were familiar already to P. Kretschmer. The interpretation has always been problematic. Wachter did not know the explanation either. To have recourse to the analogy of "πί(μ)πλημι", "Ἀγαμέμνων" etc. did not appear convincing. There couldn't be found a better explanation than either by analogy or by a tendency this writer draw the attention to, and well attested in Medieval and Modern Greek, the nasal epenthesis before stops, like «μαγκούρα» (attested as μακκούρα in Hesychius), or Χαλάνδρι (an Attic place-name deriving from Χαράδρα), or even the French word garçon meaning 'waiter' in Modern Greek, becoming in simple people's usage "το γκαρσόνι" (pronounced [toŋ gar'soni] instead of [to gar'soni]). Greek, viewed as a vertical continuum, this proposal does not appear as daring to this writer. See Katonis, 2010 I: 156, where also "Ἀμβοκου", "Ἀρύμβας", "Τορύμβας" and "Ὀρομπάτα" (= Ὀρειβάτης), (Wachter, 2013, lecture on 6.09.2013). Surprising the existence of these early forms as it may be, there is an important methodological principle at work. Traditionally, I would say that philology comes first: first the *material* has to be registered, then the *interpretation* (theory) may come. This is an obvious principle for any classicist I think, and for a considerable number of linguistics, too. Martinet would remark: "Laissez parler les faits". For several others, like Chomsky, theory comes first. This is the *mentalism* vs *objectivism* controversy. No contradiction to my mind: the two positions can and must cooperate and help one another just like in this case (to this methodological controversy cf. e.g. Babinotis, 1998 : 20-21).

Another deficiency of Lass' system is that it does not imply satisfactorily the cases of strengthening. Though Lass admits "movements to the left", his diagram votes for *one* direction. I have replaced his arrows with two bidirectional ones in the above diagram. Considering the *environment* of the supposed changes Lass and others remark that the intervocalic one (V__V) is a "prime weakening environment"¹⁷⁰. This is certainly true, and Martinet had already formulated before him

170. LASS, 1984: 179 (8.3.2); CRYSTAL, 1997: 201-202 etc.

the same postulate. Yet Martinet's approach is much better when he writes about "*contextes de grande ouverture*" and "*articulations [...]* *ouvertes*"¹⁷¹. As instances like "Butrum", "buxus", "publicus", "ἀπρῆκοδι", "σαδραπᾶν", "Βάλαγρος", etc. clearly show the label "intervocalic" is not sufficient. In the corpus I mention above, most cases of the supposed first attestations of opening (or weakening in general) are indeed intervocalic. In numerous cases I found also consonants: these are *nearly always* liquids and nasals, with modern terminology sonorants¹⁷². Nasals - Liquids - Approximants - Vowels constitute a succession on a Sonority Hierarchy, similar to the Strength Hierarchy. The basic notion of such scale is that stop consonants and open vowels are at opposite ends of a continuous dimension, with other segment classes ordered in between. This assigns similar effects to liquids and nasals with vowels according to their degree on the scale¹⁷³. For this reason, as a description, I propose the structure "S__S", i.e. that of an *intersonorant*¹⁷⁴ environment.

This environment, as we have seen, is not only weakening, it is also a strengthening one, depending on the direction of the change. To cover this bidirectional dimension, from a functional viewpoint, I would propose the term WS (i.e. Weakening-Strengthening) - *Environment*. /-bb-/ of the above "Ἀρύμβας" happen, again, to be intervocalic. Initial posi-

171. Cf. MARTINET, 1955: 288 (11.41 [:66]), also 109 (4.21, 4.22), 263-274 (11.10-11.21), and 1981: 99 [4.21, 4.22], 192-209 (6.49-6.75) in German, respectively.

172. For this term, uniting vowels, glides and liquids, cf. KATAMBA, 1989: 43 (3.3.1); CRYSTAL, 1991: 320, 1997: 354; TRASK, 1996: 326-327. As to environment, the following relatively rare instance of strengthening should not be an exception: "k' elyδ' (= 'elδev') ὄναρο τῶν ὕπνου του /'he had a dream'/» (Passow DXII, p. 390, 19th c., Arta, Epirus). The <δ> must certainly have been spirantized. Essentially, it may be regarded to have the same phonemic context as the examples mentioned in fn. 171. Cf. 12

173. For the *place* of vowels, liquids and nasals on a general Sonority Hierarchy or Sonority Scale, as well as the Hierarchy itself, cf. DRESSLER, 1985: 35-36 (3.2.1.2); HOGG - McCULLY, 1987: 32-33 (2.2), 42 (2.4), 51 (2.5), 60 (2.2); KEATING, 1988: 293-294; KATAMBA, 1989: 104 (6.2.1), 158-159 (9.3.1); CRYSTAL, 1991: 320-321, 1997: 354, TRASK, 1996: 327-328; CARSTAIRS-McCARTHY, 1999: 153 (5.5.1). It is unfortunate that this author has the voiced and voiceless stops in the same level ("[p, b, t, d, k, g]"). See also KATONIS, 2010 I: 208-209, and the newly proposed scale on p. 147.

174. Cf. DRESSLER, 1985: 60 (5.2.2, "Lenition [between sonorants]"), and HOCK, 1986: 83 (5.2).

tion (like e.g. "οσκού", "ἐν" or the examples mentioned above under "γαίματα") could rank here, too¹⁷⁵.

If we compare the instances of weakening to those of strengthening, it becomes clear that the first are both more numerous and more "regular" in comparison with the second. Lass recognized this inconsistency when he wrote that "weakening is more natural". The exact proportions must be left to further investigation. While e.g. /v/ and /y/ develop as epenthetic spirants, for /ð/ this does not seem to be the case (cf. "Ἀνδρα", or Spanish "vendra" which correspond to the stage of "χαμνιδά"). Beside this, within weakening, both opening and deletion of "spirantized" /g/ seems to be better attested in comparison with the other phonemes. Trying to find some explanation for the role of /g/ ~ /y/, a phoneme articulated much lower on the vocal tract than /β/ and /ð/, one cannot help but recall the consequence Martinet ascribes to the larynx, or more exactly to a part of it, the *glottis*: these are the *first* articulators, both in space and importance (one would ask, and in time? — thinking of a possible linguistic genesis). The glottis has "une place bien à part: elle est, sur la route de l'air qui sort des poumons, le premier obstacle possible et, du fait de la bifurcation nasale prochaine, le seul organe qui commande nécessairement tous les autres"¹⁷⁶. This issue seems to be connected with the question about the linguistic potential of early man. Stringer and Gamble give a definitely positive answer with regard to communication capabilities of the Neanderthals and maintain that these must have had at least a rudimentary language¹⁷⁷.

More recently, Lieberman has given a reassessment about the larynx and its *low* position in humans: "The newborn human breathing-eating arrangement is the «standard plan» for all present-day mammals, except normal human beings over the age of three months or so, when

175. MARTINET, 1955: 312 (12.21), 374 (14.5), 381 (14.13), 1981: 257 (9.10); cf. LASS, 1984: 181-182 (8.3.2).

176. MARTINET, 1955: 108 (4.19); (in German) 1981: 98 (4.19). Cf. FOLEY, 1977: 28 ("g spirantizes more readily").

177. 1993: 90, 217. A discussion about the "grand absent de la préhistoire", i.e. *language*, is not possible here. See C. PERLÈS (1997: 628) on the possibilities of *Homo sapiens*, *Homo habilis* and *Homo sapiens neanderthalensis*. More recently D. VIALOU (in: VIALOU ET AL., 2004: 832) remarked that *Homo* must have had the capability of articulated speech. It is difficult to conceive the makers of the Levallois technique (débitage Levallois), e.g., without language. This takes us back in time about 400,000 to 300,000 years from present (see p. 853 *ib.*).

the larynx begins to descend down into the pharynx. [...] It takes about fifteen years for the larynx to reach its final low position¹⁷⁸."

As ascertained, strengthening shows "incomplete" and has a pattern with more and much bigger skips. Drachman drew further the attention to the fact that there are also "impossible fortitions": a "place-less" consonant cannot acquire "place". According to this a process like /h/ → /s/ is excluded while the reverse is well known in Greek and elsewhere¹⁷⁹. Until we have a better StPh Diagram and more instances of strengthening examined, I would like to propose to understand the nature of strengthening processes as "winding-up". After a "wound up" structure "runs down" the stages of the StPh Diagram it "winds up" again in a form supposed to be circular, and in circumstances that still need to be specified. A recent Cypriot example reminds clearly of this mechanism. There are two nicknames of Εὐπρίδης: "πίδης" and "πίπης"¹⁸⁰. Instead of a "*πίς", as foreseen in the system, there is a skip.

178. LIEBERMAN, 1998: 59 (see also 45, with the "common wisdom": larynx = 'voice box'). It is very interesting to find that L. assumes that Neanderthal Man couldn't produce such close phonemes as [i], [u], and [k], [g] (p. 63). Could this mean that human speech began with fricatives consonants? The order of these, by the way, unlike all other phones in the IPA chart, is full (cf. e.g. CRYSTAL, 1991: XIV, 1997: XVII. The chart is now updated to 2005. The feature here mentioned has, naturally, not changed). If yes, then the DONEGAN - STAMPE Precedence Principle would find a corroboration here. Lieberman and Crelin give a more detailed picture: as to /g/ and /k/, they arrive at the same conclusion (1971: 216). But computer simulation indicated that the Neanderthal vocal tract was limited to labials and dentals, i.e. /b/ and /d/ (*ib.*, p. 213). Could this throw some light on the problem of the "rare attestation" of /b/ in IE? Would IE /b/ have been in the process of a strengthening (after a first weakening), as supposed by some, though with a different terminology? IE /b/-/d/-/g/ seem, in any case to have followed a chronological sequence, not a simultaneity as phonology suggests. Would this sequence have been engaged in Man's recapitulation of his evolutionary philogeny somehow in the sense Lieberman and Crelin hint at the ontological development (1971: 217)? To the position of the larynx cf. *ib.*, 209-210, 216. Lieberman's idea about the larynx is carried on by CARSTAIRS-McCARATHY who thinks that speech capacity emerged much earlier than Neanderthals appeared (1999: 125-129 [5.3], 178ff. [6.2.1ff.], 182ff. [6.2.2ff.], 203ff. [6.3.2ff.]) and by Tecumseh Fitch (2002) who allows for still more inheritance from animal kingdom and a longer evolutionary history (see. pp. 36, 39).

179. DRACHMAN, 1980: 11. This should perhaps be investigated. In which sense is a laryngeal "place-less", really? Not the same, of course, but among "sonorant to fricative change" j > s has been registered in Yakut (Cser, 2003: 81 [4.6.7]).

180. DRACHMAN ET AL., 1999: hand-out, p. 3. Published as DRACHMAN ET AL., 2001: 492-494.

The paper cited calls this a "prophylaxis". If we accept the existence of winding-up and of circularities, this is a winding skip forward. A second pressure in the form of an analogical influence should not be excluded: there are two more similar nicknames in Cypriot Greek: "πόπισ" (Προκόνης), and "πεπού" (Ευτέρη). Both of them have a phonetic form which could have influenced "πίπης"¹⁸¹. The form "πίπης", again, is well supposed to "run down" its stages until "πίδης". It could even proceed until "*πίς", though it is not without some risk to predict now that such a process is, in fact, going to start and is to come full circle. Accepting Foley's term "modular depotentiation" in which a maximally strong element is converted to the weakest, couldn't this mechanism be regarded as the opposite and be called a "modular potentiation"? Such an expression is missing in Foley¹⁸². Alternatively, couldn't the mechanism have something in common with the Donegan - Stampe Precedence Principle mentioned earlier?

Weakening and Strengthening processes seem, in any case, to have a curving course, the one in a descending, the other in an ascending spiral movement respectively. There could be much more consideration on the spiral form of motion as being perhaps the general shape of evolution. The idea has got a wide acceptance e.g. in biology¹⁸³. The only discipline to synthesize is however perhaps philosophy, rather than linguistics. As an example of recent thinking in the field of social sciences I draw the attention to Ch.K. Maisels who believes that Evolutionary Landmarks succeed in a winding form and that present, illuminated by past, proceeds in spirals to the future. With every simplistic apriorism and/or idealistic transcendence excluded, I recognize this shape also in linguistic processes, and would therefore disagree with the rather loose wording of Lieberman when he writes in his "Coda" that "Evolution in itself has no direction". This claim seems to contra-

181. DRACHMAN ET AL., *ib.*

182. For the term *modular depotentiation* and its interpretation cf. FOLEY, 1977: 108, 123, 126 and TRASK, 1996: 225. For potentiation see FOLEY, 1977: 108, 144.

183. "Die Lebenskreise (Ontogenien) decken sich nicht völlig und sind daher in unserer graphischen Darstellung [...] zu einer Spirale aneinandergefügt. Auf Grund dieser und anderer Belege [...] ist nun die Evolutionswissenschaft zur Überzeugung gelangt, daß solche Ungleichheiten sich gesteigert haben, daß Ungleichwerden von Ahnen und Nachfahren im Laufe von Jahrhunderttausenden und Jahrillionen auch zu Unterschieden geführt hat, wie wir sie heute zwischen Vertretern verschiedener Arten, Gattungen, Klassen usw. kennen" (ZIMMERMANN, 1953: 4-6). More recently JENKINS, 2000: 157-158. See also 147ff., and KATONIS, 2010 I: 210-213.

dict empirical experience. This holds true also of language and I agree with Bichakjian when he expresses himself in a similar way¹⁸⁴.

184. MAISELS, 1999: Figure 1.0; p. 27, 29; LIEBERMAN, 1998: 150, BICHAKJIAN, 1990: 48 (5).

4. Conclusions and Perspectives

4.1. To resume the introductory considerations about whether systemic pressure is the only or the main reason for opening in Greek we may conclude that strength movements seem to be much more universal: they exceed proper Greek processes both in time and space, and at the same time they unite ^{the} Greek language through all its periods. Opening is just *one* lenition stage in a hierarchy of several other weakening processes, though is a major one for the consonant system. The reason of this excellence must be the asymmetrical set of Ancient Greek consonantism. I suggest recognizing the causes of Gk "spirantization" as the result of a cooperation between the assumably universal StPh movements and the paradigmatic imbalance of the classical language. This conspicuous asymmetry in the phoneme inventory will have to be investigated in a special study. Explanation of its appearance might be sought in the mixed nature of the language, interpreted both from the linguistic and archaeological viewpoint, as have done this already, in first attempts, among others, J. Chadwick and M.B. Sakellariou. It should be asked, too, if and how far Ancient Greek phonemic system continues the frequently analyzed *asymmetrical* PIE obstruent system. Strength movements, anyway, should not be excluded in the IE level, either¹⁸⁵.

185. Chadwick writes this: "The Greek peoples were not indigenous, but the Greek language arose through the mixture of a group of Indo-European speakers with an earlier population, and this group penetrated Greece at some time during the Middle Helladic or Early Helladic III period" (1975: 819). Sakellariou's respective contribution is that a migratory IE population superimposed himself, possibly in Rumania, over an otherwise unknown Balkan population. He suggests calling the new population "Proto-Greeks *bis*" (1980: 163). This means that the immigrant Indo-Europeans entering Greece, *already* had a mixed character both in language and origin. - As to IE strength movements, cf. WOODHOUSE, 1998: 62-63, though he is very critical and

With regard to phonemics, the language was deemed to change soon¹⁸⁶. A new, more symmetrical pattern may be supposed to have been formed relatively early as datings of the lemmata show; certainly earlier than Hellenistic times, and contrarily to what is assumed in general. The new arrangement, according to the principles of theoretical phonology, appears to be stable, and does not seem to change at present, despite of frequent dialectical processes¹⁸⁷. At the same time the language is not stationary. Frequent opposite processes like those cited in 3.2. above might be interpreted as a low-depth circular movement, in appearance an "oscillation", as being the outcome of the lack of further "vertical" development. "Stable", in any case, does not contradict linguistic dynamics¹⁸⁸.

sceptical. To problems of the IE obstruent system, a frequent object of research, cf. e.g. STANLEY, 1985: 39-40, 51-53; LEHMANN, 1993: 87 (4.4.3), 93ff, 137ff.

186. There is no place here to survey cases which have the phoneme /b/, like e.g. <βῆ βῆ> (sheep's bleating). For an attempt at their explanation cf. KATONA, 1999: 476-477.

187. This feature of linguistic evolution, again, finds a good coverage by Martinet when he explains western Romance processes. He does not hesitate to posit several hundred years, or even two thousand years for some of them to take shape: "l'élimination totale des voyelles atones posttoniques n'est que le résultat d'une tendance vieille de deux mille ans à les affaiblir" (MARTINET, 1955: 297-298 [12.1]). Similarly 144 (4.69), 301 (12.8), 366 (13.64).

188. Cf. VACHEK, 1970: 69.

4.2. StPh, the frame of the above study, a "side issue"¹⁸⁹ for over a century but an approach justified and reasonable¹⁹⁰, tested on Greek material seems to work well. It is obvious that the skeletal structure needs refinements. Beside the Donegan - Stampe examples mentioned above, other examples like English "stream" or German "Strom", as well as Greek "Σαμψών"¹⁹¹/'sampsōn' < 'Samson'/'', and further also "Ἰσραήλ-τ-ς" ('Ἰσραήλ-ης'), "Ἰσραήλ-τ-ς" ('Ἰσραήλ-ης')¹⁹² etc., need to be explained satisfactorily. While Lass gives a unified Sonority-Openness Hierarchy, others work e.g. with three other scales: an Environmental Hierarchy, a Hierarchy of Major-Class and Manner Features, and a Hierarchy of Cavity Features¹⁹³. An ideal hierarchy — having perhaps a cylindrical or a conical shape — would completely incorporate vowels, sonorants and consonants and would explain processes in terms of the conservation of energy principle already cited: disappearing energy in one form would reappear in another. So that one can restore the assumed economic circuit the "unseen side" of the strength scale here used should be found. Despite various objections¹⁹⁴, StPh implications seem to be universal¹⁹⁵. Being a help to follow the vertical (historical)

189. CRAVENS, 1984: 269.

190. DRESSLER - GROSU, 1972: 53-54 (12.3); CRAVENS, 1984: 307, 1987: 171, 176-177; KATAMBA, 1989: 103 (6.2.1). Especially Cravens emphasizes the possibilities of this approach in exploring continuous evolution (1987: 177).

191. Cf. LXX Judges 16,1: "Καὶ ἐνορεύθη Σαμψὼν εἰς Γάζαν" (3rd-2nd c. B.C.).

192. OECONOMIDES, 1958: 130.

193. ESCURE, 1977: 58, 60, 62; FOLEY, 1977: 145-146 (with different approach and terminology). - I have met a dozen hierarchies so far, a few of them being synonymous.

194. See some details in CRAVENS, 1984: 270 (2).

195. Hock is hopeful about the possibilities: "The weakening hierarchy is not just a convenient summary of developments, it predicts the direction of development for a class of sound changes and in so doing, defines these changes as a class" (1986: 84

continuance of Greek, StPh appears to have a certain relevance to early IE consonantal processes. It could also be thought of as an instrument exploring various stages both of the Greek and of the IE level. In some cases it seems to be able to help interpreting difficult issues like IE **leh₂uós*, the Anc. Macedonian /β δ γ/, or problematic word forms like *αἰα-φαἰα-φῆ* (see fn. 78) and Lat. *publicus, rosa*. In my personal evaluation this type of phonology is perhaps also capable of contributing to an explanation of linguistic change in the widest sense¹⁹⁶.

One of the benefits of the approach is, once more, that it proves the coherence between the various stages of Greek, an obvious fact in linguistics, but disputed in smaller or larger details.

As the introductory survey in phonology shows, Greek, one of the most investigated languages, is poorly represented in theoretical research¹⁹⁷.

Yet, phenomena as early as prehistoric and as late as of our days, show sometimes similarities of the kind that cannot be disregarded. We listed above (see the contribution by R. Wachter, 2013) some cases of 5th c. Attic prenasalization (like *Τῆνυπόλεμος*, *Νεοντόλεμος* e.g.). This development is akin to sonorization, and sonorization is ranked under a general weakening. Before listing forms of actual Modern Greek, there may be registered some more older facts: Beekes (2010 I: XXIV) analyzes *prenasalization* in Pre-Greek words. With regard to

[5.2]). I share his optimism despite the fact that further on he appears, with some inconsistency, restrictive (p. 638 [20.5]).

196. Lass' *negative* assessment ought to be re-shaped accordingly (1984: 183 [8.3.3, "implicational hierarchies"]). Cf. HYMAN, 1975: 15 (1.5.1, "implicational universals"); FOLEY, 1977: 108 ("systematic prediction"), 149 ("implicational universals"). - As to IE level, Ch. Schleicher makes use of terms like "Lenition", "strength of articulation", "fortitioned", etc. (*Indogermanische Forschungen* 99, 1994: 32, 33, 35). Although WOODHOUSE (1988) severely criticized this article, his contribution shows at the same time that the lenition-fortion idea may not be irrelevant to PIE phonological processes. This picture is usefully complemented by the consonantal system MEIER-BROGGER gives on the relations between PIE, Mycenaean, Classical and Post-Classical Greek with the outcomes [b g d l, l p t k l, l f p x] where, however, the new stops [b d g l] are missing (1992 II: 107ff.).

197. Several other contributions dealing with consonantal strength processes or related issues offer the same picture: Greek is either totally or almost totally absent, or, in the best case, under-represented. Some more authors of papers or books of this category checked by the present writer, cited here only by names without further details, may be indicative: Blumenfeld, Brandão de Carvalho, Bye - De Lacy, J. Harris, Hickey, Hualde, Lavoi, Lindblom, Pierrehumbert, Segéral - Scheer, Udo, etc.

"Pre-Greek" Beekes is sometimes idiosyncratic. GEW and DELG are not really superceded by his dictionary¹⁹⁸. However, the aims of the present study, which assumes a universal force for strength movements, are not annihilated even if non-Greek forms are co-analyzed. Such words as *κόρυμβος*, *κόγχρυς* etc. were discussed already by Hatzidakis. Beekes' approach was able, in any case, to unite *κόρυμβος* and *κορυφή*, *κόγχρυς* and *κόγχρυς* in one couple. On p. XLII, there are more examples. One has the impression that there is an underlying regularity. Martinet, as early as 1955, discussed this development with regard to Basque, and to some African languages where /m^b/ appears in a separate set of phonemes. He then assumed that this "type of phonology" existed once in the whole Mediterranean¹⁹⁹. It was only natural then that Greek — if not already a carrier of the feature — was influenced.

What can later phases of Greek contribute? Examples like *ἁλάνθος* (= *ἁλάνθος*) are familiar from earlier contributions. In Argyroupoli, the North-Western suburb of Athens where this writer lives, one can observe on a large wall the name *Χαντζηκωνσταντή* (instead of *Χαντζηκωνσταντή*), followed by a telephone number, obviously the name of a contractor. Is this a medieval name variant, belonging to the same category as e.g. *Χαλάνδρι*? Whatever the case, the form reminds of quite recent borrowings already dealt with. The English word "detective" appears — according to Babiniotis' dictionary — as *ντετέκτιφ* (the "normal" variant) and — "popularly" — as *ντεντέκτιφ*. Phonetically, the second "should" be [de'dektif]; however, *prenasalization* exists, too. [de'ndektif] can or could also be heard: as this writer was informed by an elderly native speaker, [de'ndektif] belongs perhaps only to the language spoken by the 20th c. Greek Istanbul-Constantinople refugees. "[de'dektif]" is an example of sonorization, very frequent in Greek, and is a case of *weakening*. A repeated personal observation in church services is the chanted form [edi'someθa]. This is a subjunctive (a *coniunctivus aoristi*) of the verb *αἰτούμαι* with imperative sense, and orthographically goes as *αἰμσώμεθα*. In "normal" modern pronunciation this is supposed to be heard [eti'someθa]. A following prenasalization has not been observed in this case

198. See a critique by Meissner (2013; to prenasalization, cf. pp. 8-9). B. is too restrictive; many of his examples may well be Indo-European (see p. 12).

199. 1955: 387-388 (14.19), 2005: 249-250 (9.13). There, he also discusses shortly the *m-b* alternance which is familiar in Greek as well.

but a "[deŋdektif]" must, logically, follow a previous "[de'dektif]", which, again, comes after "[de'tektif]". These forms, starting from unvoiced stops arriving at voiced and prenasalized ones, are, indeed only about the half of the cases. In a good number of names and words *denasalization* is observed: so that one cites very familiar cases, the name of the large avenue in Athens that connects the centre with Faliro, is orthographically "Συγγρού". This "should" be pronounced and transcribed as [siŋ'gru] and "Singru" respectively. However, a transcription as "Sigru" or "Sigrou" is frequent, and the pronunciation [si'gru] is frequent, too. The name behaves equally in Thessaloniki. There, two more street-names may be remembered: one can observe in transcription "Olibiados", and also hear [olibi'aðos], for "Ὀλυμπιάδος". Equally, "Αντιγονιδών" is transcribed "Adigonidon" and heard [adiyoni'don]. To summarize in a simple way: a nasal appears where it "shouldn't" and a nasal disappears where it "should" remain. Something, Lorentzatos called "Interminglings" (Ἀνμειγξεις) more than hundred years ago²⁰⁰, and something which reminds of the Donegan- Stampe principle regarding strengthening and weakening.

One cannot but remember again Martinet's "see-sawing" and the repeated hint at political history. If we, following the French scholar, tentatively extend our horizon, isn't this a kind of reflection of history ever "oscillating" over the Greek soil? Don't we see one step forward, and perhaps one more, in history, one step back, and only rarely more steps than two forward, quite often only backwards, and clearly not always as the result of a free option, and *never* stepping *only* forward? Those who know the real nature of the Greek round dances will perhaps not be surprized by the comparison: the dances do not imply a steady progress in circle but usually a set of two or more steps forward, and the same number minus one or more backwards. There is an advance, say, a headway, but pushing forward happens slowly, almost never in only one direction. To be precise, as dancing master Ilias Siatis, mentioned above, kindly informed me recently, since the number of Greek dances is extremely high, there exist numerous dances that do not have this shape exactly. There are ones without a moving backward. Their percentage is about twenty to eighty. We may keep then, that the over-

200. For a recent analysis, see PETROUNIAS, 2013: 173ff., with more examples; and, with some inconsistency — since he discusses Classical Greek — PETROUNIAS, 2007 (a): 562.

whelming majority has the structure described; some of them use forward steps combined with inward ones, and the rest differs. These, however, again, are not always clear cases of pushing forward in a circle. Several among them are meandering, resemble a "labyrinth", or follow other unusual courses. The conclusion is, essentially, the same: the standard model is ahead *and* back, with a slight difference in favour of the first. One would not like to be accused of introducing superfluous implications. One lives however the everyday life of this country following it from within, having had enough opportunity to follow it also from abroad. One has read some details from the tradition, the history of the place, and one just timidly approaches a holistic view Nanopoulos and Babiniotis (2010: 158, 184, 185, 189) so warmly suggested. We are all the same, even the stellar systems consist of atoms. We, the individuals differ only inasmuch as we reproduce ourselves, we have self-movement, etc. as Nanopoulos remarked on the last page cited above.

Unexpectedly, I find myself corroborated by D. Fatouros, President of the Centre for the Greek Language in Thessaloniki when in the revised and expanded translation of the Greek text of *A History of the Greek Language* (first published in Thessaloniki, 2001), he writes the following: "A.F. Christidis was among the pioneers of the Centre for the Greek Language, working with particular dedication to achieve its goals and purposes [...]. His seriousness of scholarly purpose and his quest for a *holistic* (underlining mine) means of confronting the language phenomenon marked his own academic work as a whole and opened up new roads for approaching the history of Greek." (Fatouros in Christidis et al., 2007: XXXIX).

Working up Martinet's monumental contribution, the *Économie*, was a real challenge for this writer. This was something completely different from preceding behaviorism — against which also Chomsky revolted — and the agnostic position Bloomfield held: "The causes of linguistic change are unknown". An abortive effort and position, indeed, also methodologically unfruitful and incorrect. Martinet undertook to explain and after more than fifty years, his contribution is as important as it was. More than a decade later, Szemerényi, still hesitated. To his inference "the ultimate causes still elude us" I put a question mark (Katonis, 2010 I: 189 [;588]). Szemerényi, to be sure, solved a very considerable number of Indo-European issues. Has Martinet explained everything? Obviously, as happens always in scholarship, as many new questions emerged as have been answered. The present con-

tribution tries to give some explanations and answers, but the summary may be the same: still many questions remain unanswered.

4.3. Martinet's concept of "seesawing", when reconsidered in terms of evolution, along the Greek vertical continuum, seems to be traceable back down to Indo-European horizon. On the grounds of Lieberman's and e.g. Stanley's observations, as well as the Donegan - Stampe principle, in itself perhaps not very convincing, it might be asked whether the weakening-strengthening chain was really launched with a strengthening at its beginning²⁰¹. This would have followed *not* a first weakening but rather a first "slack" manifestation: PIE consonant phonemes (and before them human speech?) might have begun with velar or even lower fricatives.

201. Cf. LIEBERMAN - CRELIN, 1971: 216; LIEBERMAN, 1998: 63; STANLEY, 1985: 51-52; DONEGAN - STAMPE, 1979: 158 (3.3).

Addendum

A further argument in favour of palatalization is to be found in Marazzi (2013: 268-269) where the Mycenaean doublet *a-ke-ti-ri-ja* ~ *a-ze-ti-ri-ja* is discussed. They are supposed to cover the same word with, perhaps, two dialectical variants. Phonetically, the first might have been “askētriai”, the second “a(s)t^sētriai”, both “ἀσκήτριαι” (‘female workers’ or ‘apprentices’). Marazzi discusses the forms on the context of the so-called 2nd Mycenaean Palatalization. For the two forms, their attestation, and possible different interpretations, see DMic. I 42. To *-ze-to* cf. also Katonis 2010 I: 135, II: 165.

- Aitchison, Jean
 1974 : Phonological change: some causes and constraints. In: M.J. Anderson - C. Jones (eds), *Historical Linguistics II. Theory and description in phonology*. New York: American Elsevier Publishing Company, Inc., 1-15.
- 1991 : *Language Change: Progress or Decay?* Cambridge etc.: CUP (Second edition).
- Allen, Sidney W.
 1962 : *SANDHI. The theoretical, phonetic, and historical bases of word-junction in Sanskrit*. 'S-Gravenhage: Mouton & Co.
- 1965 : *Phonetics in Ancient India*. A Guide to the Appreciation of the Earliest Phoneticians by W.S. Allen. London etc.: Oxford University Press (© 1953, reprinted 1961, 1965).
- 1987 : *Vox Graeca. A guide to the pronunciation of classical Greek*. Cambridge: CUP (First published: 1968, Second edition: 1974).
- Babiniotis, Georgios / Μπαμπινιώτης, Γεώργιος
 1972 : *Τὸ ρῆμα τῆς Ἑλληνικῆς*. Δομικαὶ ἐξελήξεις καὶ συστηματοποίησις τοῦ ρήματος τῆς Ἑλληνικῆς ('Αρχαίας καὶ Νέας). Ἐν Ἀθήναις: Ἐθνικὸν καὶ Καποδιστριακὸν Πανεπιστήμιον Ἀθηνῶν.
- 1985 : *Ιστορικὴ γραμματικὴ τῆς Αρχαίας Ἑλληνικῆς γλώσσας*. I. Φωνολογία. Athens: Γραφικὲς Τέχνες Δ. Μαυρομμάτ.
- 1989 : *Mediae Question in Ancient Macedonian Reconsidered*. Athens: Σπουδαστήριον Γλωσσολογίας (manuscript, cf. Babiniotis, 1992).

- 1992 : The question of mediae in Ancient Greek reconsidered. In: B. Brogyanyi and R. Lipp (eds), *Historical Philology: Greek, Latin, and Romance*. Papers in honour of Oswald Szemerényi II, 1992. Amsterdam: Benjamins, 29-40.
- 1998 : Θεωρητική γλωσσολογία. Εισαγωγή στη Σύγχρονη Γλωσσολογία. Athens: Μ. Ρωμανός ΕΠΕ. (© by the Author).
- 1998(b) : Λεξικό της νέας ελληνικής γλώσσας. Με σχόλια για τη σωστή χρήση των λέξεων. Athens: Κέντρο Λεξικολογίας.
- 1998(c) : Συνοπτική ιστορία της ελληνικής γλώσσας με εισαγωγή στην ιστορικοσυγκριτική γλωσσολογία. Γ' έκδοση, Athens: Ελληνικά Γράμματα. (Previous publications: Athens, 1985, 1986).
- Bammesberger, Alfred
1989 : The laryngeal theory and the phonology of prehistoric Greek. In: Theo Vennemann (ed.), *The New Sound of Indo-European Essays in Phonological Reconstruction*. Berlin - New York: Mouton de Gruyter, 35-41.
- Barnes, Jonathan
2006 : *Strength and Weakness at the interface. Positional Neutralization in Phonetics and Phonology*. Berlin - New York: Mouton de Gruyter (Phonology and Phonetics 10).
- Be D : *Die griechischen Dialekte* von F. Bechtel. Berlin: Weidmann (I: *Der lesbische, thessalische, böotische, arkadische und kyprische Dialekt*, 1921; II: *Die westgriechischen Dialekte*, 1923; III: *Der ionische Dialekt*, 1924).
- Beekes, Robert
2010 : *Etymological Dictionary of Greek*, I-II. With the assistance of Lucien van Beek. Leiden-Boston: Brill.
- BGU : *Berliner Griechische Urkunden*. Berlin: Weidmannsche Buchhandlung (1895-)
- Bichakjian, Bernard H.
1990 : Language change: cyclical or linear? In: H. Andersen - K. Koerner (eds), *«Historical Linguistics 1987»*. Papers from the 8th International Conference on Historical Linguistics (Lille, 31 August - 4 September 1987). Amsterdam - Philadelphia: John Benjamins Publishing Company: 37-49.
- Blank, David L.
1993 : Apollonius Dyscolus [in English]. In: Wolfgang Haase - Hildegard Temporini (eds), *Aufstieg und Niedergang der Römischen Welt*, II, 34,1: 708-730.
- Botinis, Antonis
2011 = Μποτίνης, Αντώνης, *The Phonetics of Greek / Φωνητική της Ελληνικής*. Second enlarged edition. ISEL Editions (International Society of Experimental Linguistics).
- Braun : Karin Braun: *Der Dipyron-Brunnen B1. Die Funde. Mitteilungen des Deutschen Archäologischen Instituts, Athenische Abteilung* 85 (1970): 129-269.
- Brixhe, Claude
1976 : v. DGP
- Buck, Carl Darling
1955 : *The Greek Dialects. Grammar Selected Inscriptions Glossary*. Chicago: The University of Chicago Press.
- Bußmann, Hadumod
1990 : *Lexikon der Sprachwissenschaft*. Zweite, völlig neu bearbeitete Auflage, Stuttgart: Alfred Kröner Verlag.
- C = De Heraclide Milesio Grammatico Scripsit Fragmenta collegit disposuit illustravit Leopoldus Cohn, *Berliner Studien für Classische Philologie und Archäologie* I (1884): 603-717 (Opus etiam seorsum expressum est Berolini: 1884).
- Carstairs-McCarthy, Andrew
1999 : *The Origins of Complex Language*. An Inquiry into the Evolutionary Beginnings of Sentences, Syllables, and Truth. Oxford: University Press.
- Carvalho, Joaquim Brandão de - Scheer, Tobias - Ségéral, Philippe (eds)
2008 : *Lenition and Fortition*. Berlin - New York: Mouton de Gruyter (Studies in Generative Grammar 99).
- Chadwick, John
1975 : The prehistory of the Greek language. In: *The Cambridge Ancient History*. Vol. II, Part 2, 805-819.

- Chomsky, Noam
2000 : *New Horizons in the Study of Language and Mind*. Cambridge University Press.
- Christidis, A.-F., with the assistance of Maria Arapopoulou, Maria Christi (eds)
2007 : *A History of Ancient Greek. From the Beginnings to Late Antiquity*. Cambridge: University Press (Revised and expanded translation of the Greek text, published in Thessaloniki in 2001).
- CIL
= *Corpus Inscriptionum Latinarum*. Berolini: apud Georgium Reimerum (1863-).
- Collinge, N.E.
1985 : *The Laws of Indo-European*. Amsterdam - Philadelphia: John Benjamins Publishing Company. (Collinge has complemented his book as "the Laws of Indo-European: the State of the Art (1998)", in *The Journal of Indo-European Studies* 27, 1999: 355-377. Subsequently, M. Mayrhofer added further details and critical remarks as "Zu Collinges «Laws of Indo-European». Ergänzendes und Kritisches". *Die Sprache* 45, 2005: 110-133).
- Cravens, Thomas D.
1984 : Intervocalic consonant weakening in a phonetic-based Strength Phonology: Foleyan hierarchies and the *gorgia toscana*. *Theoretical Linguistics* 11/3: 269-310.
- 1987 : The syllable and phonological strength: gradient loss of gemination in Corsican. In: A.G. Ramat - O. Corrua - G. Bernini (eds), *Papers from the 7th International Conference on Historical Linguistics*. Amsterdam - Philadelphia: John Benjamins Publishing Company, 163-178.
- Crystal, David
1991 : *A Dictionary of Linguistics and Phonetics*, Third Edition. Oxford: Blackwell (© 1980, 1985, 1991).
- 1997 : *A Dictionary of Linguistics and Phonetics*, Fourth Edition. Oxford: Blackwell.

- Cser, András
2003 : *The Typology and Modelling of Obstruent Lenition and Fortition Processes*. Budapest: Akadémiai Kiadó.
- D
= *Leontios Makhairas. Recital Concerning the Sweet Land of Cyprus entitled «Chronicle»*. Edited with a Translation and Notes by R.M. Dawkins. Oxford: Clarendon Press (1932).
- Davenport, Mike - Hannahs, S.J.
1998 : *Introducing Phonetics and Phonology*, London - New York, etc.: Arnold.
- Del.³
: *Dialectorum Graecarum exempla epigraphica potiora* (,Delectus inscriptionum Graecarum propter dialectum memorabilium' quem primum atque iterum ediderat Paulus Cauer. Editio tertia renovata). Edidit Eduardus Schwyzer. Lipsiae: in aedibus Salomonis Hirzelii (MCMXXIII /1923/). (Reprografischer Nachdruck der Ausgabe Leipzig 1923: Hildesheim: Georg Olms Verlagsbuchhandlung, 1960).
- DELG
= *Dictionnaire étymologique de la langue grecque. Histoire des mots* par P. Chantraine. Paris: Klincksieck (©1968-1980, reprinted: 1983; I: 1-2 A-K; II: 3-4 Λ-Ω; Index; 1999; avec un Supplément sous la direction de: Alain Blanc, Charles de Lamberterie, Jean-Louis Perpillou).
- DGP
= *Le dialecte grec de Pamphylie*. Documents et grammaire par Cl. Brixhe. Paris: Adrien-Maisonneuve (1976).
- Diver, William
1958 : On the prehistory of Greek consonantism. *Word* 14: 1-25.
- DMic. I
: *Diccionario Griego-Español*. Anejo I. *Diccionario Micénico* (Dmic.) Volumen I. Redactado por Fr. Aura Jorro, bajo la dirección de Fr. R. Adrados. Madrid: Consejo Superior de Investigaciones Científicas. Instituto de Filología, 1985.
- Donegan, Patricia Jane - Stampe, David
1979 : The study of Natural Phonology. In D.A. Dinnsen (ed.), *Current Approaches to Phonological Theory*.

- Bloomington - London: Indiana University Press, 126-173.
- Drachman, Gaberell
1980 : *Teleological explanation in phonology*. Paper for the 4th Phonology Meeting, Vienna, July, 1980 (manuscript).
- Drachman, Gaberell - Malikouti-Drachman, Angeliki - Georgiou, E. - Stavrou, G. - Symeou, R. - Tryphonos, E.
1999 : Σχηματισμός υποκοριστικών κύριων ονομάτων στην Κυπριακή. Paper read at the 4th International Conference on Greek Linguistics. Nicosia (Cyprus), 17-19 September 1999.
- 2001 : Υποκορισμός κύριων ονομάτων στην Κυπριακή. In: Y. Aguraki et al. (eds), *Greek Linguistics '99. Proceedings of the 4th International Conference on Greek Linguistics*, Nicosia (September 17-19, 1999). Nicosia: University of Cyprus / Thessaloniki: University Studio Press, 487-494.
- Dressler, Wolfgang
1985 : *Morphonology: the Dynamics of Derivation*. Ed. by Kenneth C. Hill. Ann Arbor: Karoma Publishers, Inc.
- Dressler, Wolfgang - Grosu, Alexander
1972 : Generative Phonologie und indogermanische Lautgeschichte. Eine kritische Würdigung. *Indogermanische Forschungen* 77: 19-72.
- Droysen, Johann Gustav
1937 : *Historik. Vorlesungen über Enzyklopädie und Methodologie der Geschichte*. Munique-Berlin: R. Oldenbourg (First edition: *Grundriß der Historik*, 1868).
- EDT I = Γ.Κ. Σπυριδάκης et al.: *Ἑλληνικά δημοτικά τραγούδια* ('Εκλογή). Τόμ. Α', Athens: Ἀκαδημία Ἀθηνῶν (1962).
- EDT Petr. I. = *Ἑλληνικά δημοτικά τραγούδια. Ἑκλογή κειμένων, σχόλια καὶ εἰσαγωγή* Δ. Πετροπούλου. Athens: Ἰ.Ν. Ζαχαρόπουλος (1958).
- Egger, E.
1987 : *Apollonius Dyscole: Essai sur l'histoire des théories grammaticales dans l'antiquité*. Hildesheim -

- Zürich - New York: Georg Denis Verlag (Reprint of the 1854 edition, Paris: August Durand).
= *Encyclopedia of Indo-European Culture*. Eds J.P. Mallory and D.Q. Adams. London-Chicago: Fitzroy Dearborn Publishers (©1997).
- Escure, Geneviève
1977 : Hierarchies and phonological weakening. *Lingua* 43: 55-64.
- Fauriel
= *Chants populaires de la Grèce moderne* [...] par C. Fauriel. Tome II. Paris: Firmin Didot (1825).
- Foley, James
1977 : *Foundations of Theoretical Phonology*. Cambridge etc.: CUP.
- Foy, Karl
1879 : *Lautsystem der griechischen Vulgärsprache*. Leipzig: Teubner.
- GDI = *Sammlung griechischer Dialektinschriften*. Göttingen: Vandenhoeck & Ruprecht (1884-1915).
- GEW = *Griechisches etymologisches Wörterbuch* von H. Frisk. Heidelberg: Carl Winter, Universitätsverlag. (I: A-Ko, Second edition, 1973, II: Kp-Ω, Second edition, 1973, III: Nachträge. Wortregister. Corrigenda. Nachwort, ©1972).
- Goldsmith, John A.
1990 : *Autosegmental and Metrical Phonology*. Oxford UK - Cambridge USA: Blackwell (Reprinted 1994).
- Goll, Reinhard
1972 : *Der Evolutionismus*. Analyse eines Grundbegriffs neuzeitlichen Denkens. Munich: Beck.
- Grammont, Maurice
1933 : *Traité de phonétique*. Paris: Librairie Delagrave (Seventh Edition: 1971)
- Griffen, T.D.
1985 : *Aspects of Dynamic Phonology*. Amsterdam - Philadelphia: John Benjamins Publishing Company.
- Güntert, Hermann
1914 : *Über Reimwortbildungen im Arischen und Altgriechischen*. Eine sprachwissenschaftliche Untersuchung. Heidelberg: Carl Winter.

- Gurob = *Greek Papyri from Gurob*. Ed. by J. Gilbert Smyly, Dublin: Hodges, Figgis and Co. - London: Williams and Norgate (1921).
- Gussenhoven, Carlos - Jacobs, Haike
2005 : *Understanding Phonology*. Second Edition. London: Hodder Arnold (Understanding Language Series).
- H = *Hesychii Alexandrini Lexicon*. Volumen III. Π-Σ. Editionem post Kurt Latte continuans recensuit et emendavit Peter Allan Hansen. Berlin - New York: Walter de Gruyter 2005 (Sammlung griechischer und lateinischer Grammatiker, SGLG, Bd. 11/3).
- Hal = *ΔΙΚΑΙΟΜΑΤΑ* [= Δικαιώματα]. Auszüge aus alexandrinischen Gesetzen und Verordnungen in einem Papyrus des Deutschen Philologischen Seminars der Universität Halle (*Pap. Hal. I*). [...] Herausgegeben von der Graeca Halensis. Berlin: Weidmannsche Buchhandlung (1913).
- Halle, Morris - Clements, George N.
1983 : *Problem Book in Phonology: A Workbook for Introductory Courses in Linguistics and in Modern Phonology*. Cambridge, Massachusetts - London: The MIT Press (Seventh printing, 1994).
- Hamp, Eric P.
1990-1991 : Ancient Macedonian voiced and spirant obstruents, *Glossologia* 9-10: 7-8.
- Harrington, Jonathan
2003 : Consonant strengthening and lengthening in various languages: comments on three papers. In: *Phonetic Interpretation. Papers in Laboratory Phonology VI*. Ed. by J. Local, R. Ogden and Rosalind Temple. Cambridge University Press: 183-193.
- Hatzidakis, Georgios N. / Χατζιδάκις, Γεώργιος Ν.
1892 : *Einleitung in die neugriechische Grammatik*. Leipzig: Breitkopf und Härtel (Reprint: Athens: Ακαδημία Αθηνών, 1975. Second Reprint: Hildesheim - New York: Georg Olms Verlag, 1977).
- 1899 : Περὶ τῆς προφορᾶς καὶ ἐκπτώσεως τοῦ γ ἐν τῇ Ἀρχαίᾳ Ἑλληνικῇ. *Ἀθηνᾶ* 11: 162.

- 1924 : Περὶ τῆς προφορᾶς τῆς Ἀρχαίας Ἑλληνικῆς. In: *Ἀκαδημικά ἀναγνώσματα εἰς τὴν Ἑλληνικὴν καὶ Λατινικὴν γραμματικὴν* ὑπὸ Γεωργίου Ν. Χατζιδάκι. Athens: «Ἑστία»: 82-136.
- 1934 : Περὶ τῆς ἐμφανίσεως καὶ ἐξαφανισμοῦ τοῦ γ. In: Γ.Ν. Χατζιδάκι *Γλωσσολογικαὶ ἔρευναι*. Athens: ἐκ τοῦ τυπογραφείου Βιτισκουνάκη: 420-426 (First published: Ἑθνικὸν Πανεπιστήμιον: Ἑπιστημονικὴ Ἐπετηρὶς 13 [1916]: 194-201).
- Hayes, Bruce
2009 : *Introductory Phonology*. Malden, USA - Oxford, UK: Wiley-Blackwell (Blackwell Textbooks in Linguistics).
- Hayes, Bruce - Kirchner, Robert - Steriade, Donca (eds)
2008 : *Phonetically Based Phonology*. Cambridge: University Press (©2004).
- Hib = *The Hibeh Papyri*. Part I: Edited with Translations and Notes by B.P. Grenfell and A.S. Hunt. London-Oxford: H. Hart, Printer to the University (1906).
- Hock, Hans Henrich
1986 : *Principles of Historical Linguistics*. Berlin - New York - Amsterdam: Mouton de Gruyter.
- Hoffner, H.A., Jr - Melchert, H.C.
2008 : *A Grammar of the Hittite Language*. Part 1: Reference Grammar, Part 2: Tutorial. Winona Lake, Indiana: Eisenbrauns (Languages of the Ancient Near East, LANE).
- Hogg, Richard - McCully, C.B.
1987 : *Metrical phonology: a Coursebook*. Cambridge etc.: CUP (Reprinted 1991).
- Honeybone, Patrick
2008 : Lenition, Weakening and consonantal Strength: tracing concepts through the history of phonology. In: Carvalho et al., 2008: 9-92.
- HT = G. Pugliese Carratelli: *Le epigrafi di Haghia Triada in Lineare A*. Salamanca: Universidad de Salamanca (1963).
- Hyman, Larry M.
1975 : *Phonology. Theory and Analysis*. New York etc.: Holt, Rinehart and Winston.

- IC = *Inscriptiones Creticae opera et consilio Friderici Halbherr collectae*. Curavit Margarita Guarducci, Roma: Istituto di archeologia e storia dell'arte (1935-1950).
- IG = *Inscriptiones Graecae*. Berolini: apud Georgium Reimerum (1873-)
- IHC = E.W.E. Hübner: *Inscriptiones Hispaniae Christianae*. Im Anhang E.W.E. Hübner: *Inscriptionum Hispaniae Christianarum Supplementum*. Hildesheim - New York: Georg Olms Verlag (1975).
- ILNE I = 'Α.Α. Παπαδόπουλος (διευθ. καὶ ἀρχισυντάκτης): *Ἱστορικὸν Λεξικὸν τῆς Νέας Ἑλληνικῆς τῆς τε κοινῶς ὁμιλουμένης καὶ τῶν ἰδιωμάτων*. Τόμος πρῶτος: Α-ΑΜ. Athens: Τυπογραφεῖον «Ἑστία» Κ. Μάϊσνερ - Ν. Καργαδούρη (1935).
- ILNE IV,1 = 'Α.Α. Παπαδόπουλος (διευθ. καὶ ἀρχισυντάκτης): *Ἱστορικὸν Λεξικὸν τῆς Νέας Ἑλληνικῆς [...]*. Τόμος τέταρτος: ΒΛΕΦΑΡΙΔΑ - Γ. Τεῦχος πρῶτον: βλεφαρίδα-γάγγαρος. Athens: Ἑργαστήριον Γραφικῶν Τεχνῶν «Στέφανος Ν.» (1953).
- Jenkins, Lyle 2000 : *Biolinguistics. Exploring the Biology of Language*. Cambridge: University Press.
- Kafizin : *The Nymphaeum of Kafizin*. The Inscribed Pottery by T.B. Mitford, Berlin - New York: Walter de Gruyter (1980).
- Kaisse, Ellen M. 1992 : Can [consonantal] spread? *Language* 68: 313-332.
- 1993 : Rule reordering and rule generalization in lexical phonology: a reconsideration. In: Sharon Hargus and Ellen M. Kaisse (eds), *Phonetics and Phonology*. Vol. 4. *Studies in Lexical Phonology*. San Diego - New York etc.: Academic Press: 343-363.
- Karanikolas = Σωτηρίου Ἀλεξ. Καρανικόλα: Συμμετρικά λαογραφήματα. *Λαογραφία* 17 (1957): 409-440.
- Katamba, Francis 1989 : *An Introduction to Phonology*. London - New York: Longman (Second Impression: 1991).

- Katona, A.L. 1999 : Πρώιμα δείγματα αποκλειστοποίησης των πηκρών κλειστών της Ελληνικής. In: Amalia Mozer (ed.), *Greek Linguistics '97* (Athens, September 25-27, 1997). Athens: Ελληνικά Γράμματα, 472-481.
- 2001 : Φωνολογική απισχυροποίηση (weakening) και ισχυροποίηση (strengthening) στην Ελληνική. Διαχρονική προσέγγιση. In: Y. Aguraki et al. (eds), *Greek Linguistics '99. Proceedings of the 4th International Conference on Greek Linguistics*. Nicosia (September 17-19, 1999). Nicosia: University of Cyprus / Thessaloniki: University Studio Press, 374-380.
- Katonis, A.L. / Κατώνης, Α.Λ. 2009 : The Contribution of Strength Phonology to the Greek Language. Paper read at the *9th International Conference for Greek Linguistics* (29 Oct. -1 Nov. 2009) at Chicago University. Published online: http://www.ling.ohio-state.edu/ICGL/proceedings/2_Katonis_KED_17.pdf
- 2010 : Αποκλειστοποίηση των πηκρών κλειστών /b d g/ της Ελληνικής. Διαχρονική φωνολογική προσέγγιση I: Ανάλυση με παράρτημα I. II: Παράρτημα II: Σώμα Υλικού (Corpus). Athens: Πανεπιστήμιο Αθηνών - Σεριπόλαιο Ίδρυμα (Βιβλιοθήκη Σοφίας Ν. Σεριπόλου 116). (This book is essentially identical with the PhD Dissertation of the Author, defended in 2001 at the University of Athens, Greece).
- Kazansky, N.N. 1999 = Казанский, Н.Н., Развитие семантики глагольных форм, производных от корня *deiH₂-. In: N.N. Kazansky et al. (eds), *Индоевропейское языкознание и классическая филология*, III. Санкт Петербург: Наука, 33-38.
- Keating, Patricia A. 1988 : The phonology-phonetics interface. In Frederick J. Newmeyer (ed.), *Linguistics: The Cambridge Survey*. I. Cambridge: CUP, 281-302.

- Khairati = Μάρτα Χαυρέμ: 'Η ἐν Ἀκροπόλει Κυθωνίας γυναίκα μὲν τοῦ Ἁγίου Γεωργίου Κερατιδιώτη καὶ ἡ οἰκογένεια τοῦ Γαβριὴλ Σεβήρου. Ἑλληνικά ἐγγραφα (1596-1615). *Θνσουρίσματα* 6 (1969): 157-181.
- King, Robert D. 1969 : *Historical Linguistics and Generative Grammar*. Englewood Cliffs, N.J.: Prentice Hall, Inc.
- Krumbacher, Karl 1886 : Ein irrationaler Spirant im Griechischen. *Abhandlungen der Bayerischen Akademie der Wissenschaften* [1887]: 359-444.
- L = *Hesychii Alexandrini Lexicon*. Recensuit et emendavit Kurt Latte Regiomontanus. Volumen I: A-Δ (MCMLIII), Volumen II: E-O (MCMLXVI). Hauniae: Ejnar Munksgaard Editore (1953, 1966).
- Laborderie, Noëlle 2009 : *Précis de phonétique historique*. 2e édition. Paris: Armand Colin. (La collection universitaire de poche, 128).
- Ladefoged, Peter - Maddieson, Ian 1996 : *The Sounds of the World's Languages*. Oxford: Blackwell.
- Lallot, Jean 2009 : Apollonius Dyscolus. In: H. Stammerjohann (General editor), *Lexicon Grammaticorum*, Tübingen: Niemeyer. I: 58-60.
- Lass, Roger 1974 : Strategic design as the motivation for a sound shift: the rationale of Grimm's Law. *Acta Linguistica Hafniensia* 15: 51-66.
- 1984 : *Phonology. An Introduction to Basic Concepts*. Cambridge - New York etc.: CUP (Reprinted 1988).
- Lehmann, Winfred P. 1993 : *Theoretical Bases of Indo-European Linguistics*. London - New York: Routledge (Reprinted 1996).
- 1999 : The Structural Approach of Jacob Grimm and His Contemporaries. *Journal of Indo-European Studies* 27: 1-13.

- Lejeune, Michel 1972 : *Phonétique historique du mycénien et du grec ancien*. Paris: Klincksieck.
- Lewandowska-Tomaszczyk, Barbara 1992 : Cognitive and interactional conditioning of semantic change. In: G. Kellermann - M.D. Morrissey (eds), *Diachrony within Synchrony: Language History and Cognition*. Papers from the International Symposium at the University of Duisburg, 26-28 March 1990. Frankfurt am Main etc.: Peter Lang, 229-250.
- Lieberman, Philip 1998 : *Eve Spoke. Human Language and Human Evolution*. London: Picador.
- Lieberman, Philip - Crelin, S. Edmund 1971 : On the Speech of Neanderthal Man. *Linguistic Inquiry* 2: 203-222.
- Lorentzatos, P. 1904 = Λορεντζάτος, Παναγής, Ἀναμείξεις. Ἀθηνᾶ 16: 189-223.
- Lyons, John 1968 : *Introduction to Theoretical Linguistics*. Cambridge: CUP (Reprinted 1992).
- McMahon, April M.S. 1995 : *Understanding Language Change*. Cambridge: University Press (©1994).
- Maddieson, Ian 1992 : Phonemic systems. *International Encyclopedia of Linguistics* (ed. W. Bright). New York - Oxford: Oxford University Press) 3: 193-194.
- Maisels, Charles Keith 1999 : *Early Civilizations of the Old World*. The Formative Histories of Egypt, the Levant, Mesopotamia, India and China. London - New York: Routledge.
- Mann, Stuart E. 1984-1997 : *An Indo-European Comparative Dictionary* (I: A-M, II: M-U). Hamburg: Helmut Buske Verlag.

- Marazzi, M.
2013 : *Scrittura, epigrafia e grammatica greco-micenea*. Roma: Carocci editore (Lingue e letterature Carocci/158).
- Martinet, André
1950 : Some problems of Italic consonantism, *Word* 6: 26-41 (= Martinet, 1955: 326-349; 1981: 171-179).
1952 : Celtic lenition and Western Romance consonants. *Language* 28: 192-217 (= Martinet, 1955: 257-296; 1981: 192-209).
1955 : *Économie des changements phonétiques*. Traité de phonologie diachronique. Berne: Francke.
1981 : *Sprachökonomie und Lautwandel*. Eine Abhandlung über die diachronische Phonologie. Aus dem Französischen von Claudia Fuchs. Stuttgart: Clett-Cotta.
1986 : *Des steppes aux océans*. L'indo-européen et les Indo-européennes. Paris: Payot.
1989 : *Fonction et dynamique des langues*. Paris: Armand Colin.
2005 : *Économie des changements phonétiques*. Nouvelle édition complétée. Avant-Préface par Jeanne Martinet. Paris: Maisonneuve et Larose.
- Mayser, Edwin - Schmoll, Hans
1970 : *Grammatik der griechischen Papyri* aus der Ptolemäerzeit mit Einschluss der gleichzeitigen Ostraka und der in Ägypten verfassten Inschriften. Band I: Laut- und Wortlehre. I. Teil: Einleitung und Lautlehre. Zweite Auflage. Berlin: de Gruyter.
- Meier-Brügger, Michael
1992 : Griechische Sprachwissenschaft. I: Bibliographie. Einleitung. Syntax. II: Wortschatz. Formenlehre. Lautlehre. Indizes. Berlin - New York: Walter de Gruyter (Sammlung Göschen 2241).
- Meillet, Antoine
1921 : *Linguistique historique et linguistique générale*. Paris: Édouard Champion.
1975 : *Aperçu d'une histoire de la langue grecque*. 8e édition. Avec bibliographie mise au jour et complétée par Olivier Masson. Paris: Klincksieck.

- Meissner, Torsten
2013 : Forschungsbericht. Griechische Etymologie. Anlässlich von: Beekes, Robert with the assistance of Lucien van Beek: *Etymological Dictionary of Greek*. [...] 2009 [sic] etc. *Kratylos* 58: 1-32.
- Menardos
= Θρήνος της Κύπρου. Ἐκδιδόμενος ὑπὸ Σίμου Με-
νάρδου. Δελτίον τῆς Ἱστορικῆς καὶ Ἐθνολογικῆς
Ἑταιρείας τῆς Ἑλλάδος 6 (1901): 405-432.
- Méridier, L.
1931 : Notice [à Cratyle]. In: Platon. Oeuvres complètes. Tome V - 2e Partie. Cratyle. Texte établi et traduit par L.M. Paris: Société d'Édition «Les Belles Lettres»: 7-48 (Collection Budé).
- Mitford
= T.B. Mitford: Three Documents from Classical Cyprus. In: E. Grumach (ed.), *Minoica. Festschrift zum 80. Geburtstag von Johannes Sundwall*. Berlin: Akademie-Verlag (1958): 260-275.
- Mizutani, Hiroshi
1986 : Welsh lenition and the function of pre-verbal particles. *Journal of Indo-European Studies* 14: 259-271.
- Müller, Horst M.
1990 : *Sprache und Evolution. Grundlagen der Evolution und Ansätze einer evolutionstheoretischen Sprachwissenschaft*. Berlin - New York: Walter de Gruyter.
- Nanopoulos, D. - Babiniotis, G.
2010 = Νανόπουλος, Δ. - Μπαμπινιώτης, Γ., *Από την κο-
σμογονία στη γλωσσολογία. Μια συν-ζήτηση*.
Δεύτερη έκδοση. Athens: Καστανιώτης.
- Oeconomides
= Γραμματική τῆς ἐλληνικῆς διαλέκτου τοῦ Πόντου
ὑπὸ Δ.Η. Οἰκονομίδου. Athens: Ἀκαδημία Ἀθην-
ῶν (1958).
- Oxy
= *The Oxyrhynchus Papyri*. Edited by B.P. Grenfell et
al. London etc.: Oxford University Press (1898-).
- Packard
= *Minoan Linear A* by D.W. Packard. Berkeley - Los
Angeles - London: University of California Press
(1974).
- Palmer, Leonard, R.
1963 : *The Interpretation of Mycenaean Greek Texts*.
Oxford: Clarendon Press (Reprinted 1969).

- Papavasiliou = Γ.Α. Παπαβασιλείου: 'Επιγραφή Ἀράνδων. Ἀρχαιολογική Ἐφημερίς 1907: 26-27.
- Passow : ΤΡΑΓΟΥΔΙΑ ΡΩΜΑΙΚΑ. *Popularia Carmina Graeciae Recentioris*. Edidit Arnoldus Passow. Lipsiae, in Aedibus B.G. Teubneri (MDCCCLX /1860/).
- Perlès, C. 1997 : Langage. In: A. Leroi-Gourhan, *Dictionnaire de la Préhistoire*. Paris: Quadrige / PUF, p. 628.
- Petrounias, E.B. 2007 : Development in pronunciation during the Hellenistic period. In: Christidis et al. 2007: 599-609.
- 2007(a) : The pronunciation of Classical Greek. In: Christidis et al.: 2007: 556-570.
- 2013 = Πετρούνιας, Ε.Β., *Νεοελληνική γραμματική και συγκριτική ("αντιπαραθετική") ανάλυση*. Τόμος Β'. Φωνολογική Ανάλυση, Μορφολογία, Ελληνονογενείς Διεθνισμοί. Θεωρία-Ασκήσεις. Θεσσαλονίκη: Εκδόσεις Ζήτη.
- Pfiffig, Ambros Josef 1969 : *Die etruskische Sprache*. Versuch einer Gesamtdarstellung. Graz: Akademische Druck- u. Verlagsanstalt.
- Pilch, Herbert 2001 : La lénition celtique à la lumière de la reconstruction glottalique. *La linguistique* 37: 89-98.
- PMG = *Poetae Melici Graeci*. Alcmani Stesichori Ibyci Anacreontis Simonidis Corinnae Poetarum minorum reliqua Carmina popularia et convivalia quaeque adespota feruntur. Edidit D.L. Page. Oxford: Clarendon Press (©1962, Reprinted: 1967).
- Prokosch, Eduard 1939 : *A Comparative Germanic Grammar*. Baltimore - Philadelphia: Linguistic Society of America.
- PSI = *Papiri greci e latini*. Pubblicazioni della Società italiana per la ricerca dei papiri greci e latini in Egitto (Florence, 1912-).
- PY = E.L. Bennett - J.-P. Olivier: *The Pylos Tablets Transcribed*. Roma: Edizioni dell' Ateneo (Part I: Text

- and Notes, 1973; Part II: Hands, Concordances, Indices, 1976).
- Radke, Gerhard 1965 : *Die Götter Altitaliens*. Münster, Westfalen: Verlag Aschendorff.
- Rau, Jeremy 2010 : Greek and Proto-Indo-European. In: E.J. Bakker (ed.), *A Companion to the Ancient Greek Language*. Malden, Mass. - Oxford, UK etc.: Wiley-Blackwell: 171-188.
- Rix, Helmut 1976 : *Historische Grammatik des Griechischen*. Laut- und Formenlehre. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Ruijgh, C.J. 1977 : Review of Lejeune 1972. *Lingua* 42: 249-265.
- S = Ἡσύχιος - *Hesychii Alexandrini Lexicon* post Ioannem Albertum recensuit Mauricius Schmidt. Ienae: Sumptibus Frederici Maukii (1858-1868) (Volumen quintum: Sumptibus Hermannii Dufft, Libraria Maukiana, MDCCCLXVIII /1868/).
- Sakellariou, Michel B. 1980 : *Le Peuplement de la Grèce et du Bassin Égéen aux Hautes Époques III. Les Proto-Grecs*. Athens: Ekdotikè Athenon.
- Sathas = Ἀσάσαι τοῦ Βασιλείου τῶν Ἱεροσολύμων καὶ τῆς Κύπρου, Κυπριακοὶ νόμοι, βυζαντινὰ συμβόλαια, κρητικὰ διαθῆκαι. Ἐπιστάσις Κ.Ν. Σάθα. Τόμος ΣΤ'. Paris: Maisonneuve et CIE (1877; Bibliotheca Graeca Medii Aevi, vol. VI.)
- Schwyzler, E. 1939 : *Griechische Grammatik auf der Grundlage von Karl Brugmanns Griechischer Grammatik*. I. München: C.H. Beck'sche Verlagsbuchhandlung (Zweite, unveränderte Auflage: 1953; Berichtigungen und Nachträge: 819-844).
- SEG = *Supplementum epigraphicum Graecum*. Lugduni Batavorum /Leiden/: apud A.W. Sijthoff - Alpen aan den Rijn (The Netherlands) - Germantown (Mary-

- land, USA): Sijthoff and Noordhoff - Amsterdam: Gieben (I [1923]-)
- Sievers, Eduard
1893 : *Grundzüge der Phonetik zur Einführung in das Studium der Lautlehre der indogermanischen Sprachen*. Leipzig: Breitkopf & Härtel (Vierte verbesserte Auflage).
- SIG³ = *Sylloge Inscriptionum Graecarum* a Guilelmo Dittenbergero condita et aucta nunc tertium edita. Lipsiae: apud S. Hirzelium (I-III, 1915-1924).
- Sluiter, Ineke
2011 : A Champion of Analogy: Herodian's *On Lexical Singularity*. In: Matthaios, St. - Montanari, Fr. - Rengakos, A. (eds), *Ancient Scholarship and Grammar. Archetypes, Concepts and Contexts*. Berlin - New York: De Gruyter, 291-310.
- Stanley, Patricia S.
1985 : Grassmann's Law, Verner's Law, and Proto-Indo-European Root Structure. *Indogermanische Forschungen* 90: 39-54.
- Steinthal, Hajjim
1863 : *Geschichte der Sprachwissenschaft bei den Griechen und Römern mit besonderer Rücksicht auf die Logik*. Berlin: Ferd. Dümmler's Verlagsbuchhandlung (Second edition *ibid.*: 1890, 1891, reprinted: 1961)
- Stephanos = Κλων[τ] Στέφανος: Γλωσσάριον Σύρου. *Bulletin de Correspondance Hellénique* 3 (1879): 20-29.
- Stringer, Christopher - Gamble, Clive
1993 : *In Search of the Neanderthals*. Solving the Puzzle of Human Origins. London: Thames and Hudson (First paperback edition 1994, reprinted 1998).
- Sw = *The Old Testament in Greek According to the Septuagint* by H.B. Swete. Cambridge: CUP (1887-1894).
- Szemerényi, Oswald J.L.
1968 : Methodology of genetic linguistics. In: *Methoden der Sprachwissenschaft* dargestellt von H. Schnelle, H. Frei, R.H. Robins, O. Szemerényi, E. Zwirner,

- K.H. Rensch. Munich-Vienna: R. Oldenbourg Verlag: 3-38.
- 1972 : Comparative Linguistics. In: Th.A. Sebeok (ed.), *Current Trends in Linguistics* 9. The Hague - Paris: Mouton: 119-195.
- 1996 : *Introduction to Indo-European Linguistics*. Translated by Irene and David Morgan Jones from the 4th edition of Einführung in die Vergleichende Sprachwissenschaft with additional notes and references. Oxford: University Press (Paperback: 1999).
- Teb = *The Tebtunis Papyri*. Edited by B.G. Grenfell et al. London etc.: Oxford University Press etc. (1902-1976).
- Tecumseh Fitch, W.
2002 : Comparative Vocal Production and the Evolution of Speech: Reinterpreting the Descent of the Larynx. In: Alison Wray (ed.), *The Transition to Language*. Oxford: University Press, 21-45.
- Teyssier = P. Teyssier: Notes de dialectologie béotienne. *Revue de Philologie* 66 (1940): 136-142.
- Threatte, Leslie
1980 : *The Grammar of Attic Inscriptions*. I: Phonology. Berlin - New York: Walter de Gruyter.
- Thumb, Albert
1964 : *A Handbook of the Modern Greek Vernacular. Grammar, Texts, Glossary*. Translated from the second improved German edition by S. Angus. Chicago: Argonaut, Inc. Publishers (first English edition: *Handbook of the Modern Greek Vernacular* [...]. Edinburg: T. & T. Clark, 1912).
- Thumb, A. - Kieckers, E.
1932 : *Handbuch der griechischen Dialekte*. Erster Teil. Von A.T. Zweite erweiterte Auflage von E.K. Heidelberg: Carl Winter.
- TLE = *Testimonia Linguae Etruscae*. Selegit recognovit Indice verborum instruxit Maximus Pallottino. Editio altera. Firenze: «La Nuova Italia» Editrice, 1968.

- Trask, R.L.
1996 : *A Dictionary of Phonetics and Phonology*. London - New York: Routledge.
- 1996(b) : *Historical Linguistics*. London: Arnold.
- 2000 : *The Dictionary of Historical and Comparative Linguistics*. Edinburgh: University Press.
- Troubetzkoy, N.S.
1948 : *Principes de phonologie*. Traduits par J. Cantineau. Paris: Klincksieck (English translation: N. Trubetzkoy, *Principles of Phonology*. Translated by C.A.B. Baltaxe. Berkeley: University of California Press, 1969).
- Turyn = *Pindari Carmina cum Fragmentis*. Edidit Alexander Turyn. Oxonii: apud Basilium Blackwell (MCMLII /1952/).
- UPZ = *Urkunden der Ptolemäerzeit*. Herausgegeben von U. Wilcken. Berlin - Leipzig: Walter de Gruyter (1927-1950).
- Vachek, Josef
1970 : *Dictionnaire de linguistique de l'École de Prague*. Utrecht - Anvers: Spectrum éditeurs.
- Vialou, D. - Joussaume, R. - Pautreau, J.-P.
2004 : *La Préhistoire. Histoire et dictionnaire*. Paris: R. Laffont.
- Vincent = *Μάρκου Αντωνίου Φόσκολου Φορτουνάτος*. Κριτική έκδοση. Σημειώσεις, Γλωσσάριο. Alfred Vincent. Εκδοτική επιμέλεια Θεοκάρη Δετοράκη. Heracleion, Crete: EKIM (1980).
- Wachter, Rudolf
2013 : *Vaseninschriften und Alphabet*. Five lectures given during the *10th Indo-European Dahlem Summer School* in the Freie Universität in Berlin (02.09.2013 - 06.09.2013).
- Windekens, A.J. Van
1986 : *Dictionnaire étymologique complémentaire de la langue grecque. Nouvelles contributions à l'interprétation historique et comparée du vocabulaire*. Leuven: Peeters.

- Woodhouse, Robert
1998 : Some criticisms of Charles Schleicher's PIE. obstruent chronology. *Indogermanische Forschungen* 103: 61-69.
- WP = A. Walde - J. Pokorny: *Vergleichendes Wörterbuch der indogermanischen Sprachen*. Berlin-Leipzig: De Gruyter (I. Band: 1930; II. Band: 1927; III. Band: 1932; Register. Bearbeitet von K. Reichardt, Reprint: Berlin-Leipzig, 1973).
- WP 31 = K. Wessely: *Der Wiener Papyrus Nr. 31. Wiener Studien. Zeitschrift für classische Philologie* 4 (1882): 175-197.
- Xanthoudides = *Βιτζέντζου Κορνάρου Έρωτόκριτος*. Έκδοσις κριτική [...] υπό Στ. Α. Ξανθοῦδιδου. Heracleion, Crete: Έκ τοῦ Τυπογραφείου Στ. Μ. Ἀλεξίου (1915).
- Zabrocki, Ludwik
1951 : *Usilnienie i lenicja w językach indoeuropejskich i ugrofińskim - Le renforcement et la lénition dans les langues indo-européennes et dans le finno-ougrien*. Poznań: Nakładem Poznańskiego Towarzystwa Przyjaciół Nauk (French résumé: 257-289).
- Zimmermann, Walter
1953 : *Die Evolution*. Die Geschichte ihrer Probleme und Erkenntnisse. Freiburg-Munich: Verlag Karl Alber.
- Zipf, George Kingsley
1935 : *The Psycho-Biology of Language*. An Introduction to Dynamic Philology. Cambridge, Massachusetts: Houghton Mifflin Company (Second Edition Cambridge, Massachusetts: The MIT Press, 1965. Introduction by George A. Miller).

<i>Weakening and Strengthening in Greek</i>	11
1. Introduction	13
1.1. Strength movements and systemic pressure	13
2.1. Weakening	27
2.2. Strengthening	35
2.3. Weakening and Strengthening in the same word	39
2.4. Weakening and Strengthening in the same context	41
3. Interpretation	43
3.1. Phonological rules... ..	43
3.2. With the terms of the present paper... ..	45
4. Conclusions and Perspectives	67
4.1. To resume... ..	67
4.2. StPh, the frame of the above study... ..	69
4.3. Martinet's concept of "seesawing"	75
Addendum	77
References	79
Contents	103

This book examines consonantal strength movements, a dynamic aspect of phonological processes, like sonorization, lenition, deletion, epenthesis, fortition, etc., in diachronic trajectories, based on Greek material. It is argued that opening of the voiced stops — thought to be the most important case of lenition — is due first, to the universal force of strength processes, and secondly, to the paradigmatic imbalance of Ancient Greek. Such developments seem to be relevant also in certain cases of Proto-Indo-European (PIE) and might be a convenient link between some early and later Indo-European (IE) forms. There is an attempt to find an underlying regularity in such movements. A few non-Greek lemmas are also included to show that neither is the relevance of such movements limited to one language nor should Greek be thought of as isolated with regard to the dynamics of these processes.

Andreas L. Katonis is linguist, classicist, translator, teacher of foreign languages, and is Associated Professor at the Department of the Italian Language and Philology in the Aristotelian University of Thessaloniki (Greece). He is founding member of the International Society of Greek Linguistics and of ELINEPA, the Indo-Hellenic Society for Culture and Development. He is also member of editorial boards of different domestic and foreign periodicals. He has contributed a number of articles, papers and reviews to printed and online journals, and congress proceedings in linguistics, comparative philology and other topics, comparing also Indian and Greek literary works, such names as Rabindranath Tagore included. He authored three books: *Georgios N. Hatzidakis: Hungary Honours the Scholar and his Country* (2009, in Greek; a second edition is in print), *Opening of the Voiced Stops /b d g/ of Greek. A Diachronic Phonological Approach I-II* (2010, in Greek) and *Weakening and Strengthening in Greek* (2014).

Front cover: Kasimir Malevich, *Dynamic Suprematism* (1915 or 1916), oil on canvas.

D.K. STAMOULIS

9, Mantzarou Street
10672 Athens (GR)

† 21 03 62 63 48 | ☎ 69 76 33 44 93

✉ info@herodotos.net

🌐 www.herodotos.net

ISBN 978-618-81058-0-5



D.K. STAMOULIS

ANDREAS L. KATONIS

WEAKENING AND STRENGTHENING IN GREEK

Andreas L. Katonis

WEAKENING AND STRENGTHENING IN GREEK



D.K. STAMOULIS