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WEAKENING
AND STRENGTHENING
IN GREEK

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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.
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". 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 this. 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 languages. But what is in fact important in Zabrocki's contribution, is that he treats lenition together with fortition, the opposed process, in organic unity. 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 parameters.

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2. "Il se peut que le processus de différenciation dont les celtistes 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]).


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).

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Zabrocki’s early insight is perfectly correct. Martinet’s contribution to Celtic and Italic linguistics, as well as modern phonology, corroborate the thesis. Several years later, Martinet was fully conscious of the general force of these processes. As to Greek, 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 Troubetzkoy, which I prefer to cite in the French translation (Troubetzkoy, 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: 163.

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 experience to this exception (Foley, 1977), is a synthesis which is generally rejected. 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 kind of linguistic research but also because its processes like “spirantization” or the intrusion of an “irrational spirant” 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 languages. 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 Babinioti, the same does not hold true of Greek consonantism. It is revealing that Babinioti, in his historical grammar of Ancient Greek, consecrates 91 pages to the first domain and only 5 to the second. One would expect much more in Lejeune’s “Phonétique”, the

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12. This term comes from K. Krummacher (1886). These are words with a “parasitic” spirant like e.g. “δοκεω”, “δοκέω”, etc. The phenomenon is still alive. Ioanna Kappa (University of Crete) cites e.g. the following two verbs from Western Cretan dialect: "xoreyvo" /ˈdante/", "xavvo" /ˈsaw/" (5th International Conference on Greek Linguistics, 17-19 September, 1999, Nicosia, Cyprus; hand-out, p. 1). To “xavvo” cf. Krummacher, 1886: 428. As to spirantization, the term “Spiras” — with this phonological implication — is found, among others, throughout in Bechtel’s work (e.g. Be D 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”.

critiques of which are usually positive\(^\text{15}\). But he deals with “spirantization”, essentially, on three pages. The superordinate term he uses (“relâchement de l’articulation” [“relaxing/ slackening of the articulation”])\(^\text{16}\), obviously influenced by Grammont, is purely phonetic and is apparent rather than real. Moreover, he is sceptical about the opening of /d/\(^\text{17}\). More in terms of phonology, important for this paper, he approaches the problem of /t/ in Greek (“affaiblissement”, “renforcement”, etc.), still the systemic spirit is missing, and Ruigh finds also some other problems in his interpretation\(^\text{18}\). So that one is not unjust to the Greek contribution, it must be remarked, that it was G. Babiniotis 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”. Babiniotis, 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” (ουσιωδής ισχύς), “transitional stage” (μεταθεσιακός στάδιος, p. 90), “wrestling forms” (παλαιστικά τύποι, p. 91), “restructuring” (αναδιόρθωση, p. 92), “structural patterns” (οικομορφος δομής, 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” (‘Η λειτουργία ομάδων δυναμικών δένει να νοθεύσει και έπειτά τον λογικό σφαιράδα της γλώσσας, του φωνηλογικού, του σηματολογικού, του συντακτικού, p. 93). In his Phonology (1983) then, he explicitly follows Martinet using such concepts as πλάτωση, “integrated system” (French intégration), “symmetry” and “asymmetry” and “push chains” (οικοδομικά πλαστές, 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 ισχύς των φωνών, 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).
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 Phonology\textsuperscript{19} (StPh) is possible, and that results can be reckoned with not only for this language

\textsuperscript{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 “synchronisms”, and 1955: 63 (3.1), 64 (3.3.), where he is against the “structuralists” in this sense; similarly MARTINET, 1981: 58 (3.1), 59-60 (3.3). LADESPED and MADDISON 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.

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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: 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 subordinated to weakening, and opening is subordinate to lenition\textsuperscript{20}.

\textsuperscript{20} Cf. HAMP: “Babiniotis’ plausible interpretation of β, δ, γ in Macedonian [...] would be a kind of lenition.” (1990-1991: 8).
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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 phonology with various degrees of applicability. Opinions about them, too, show a certain scatter between negative and positive evaluations. Recently, positive ones seem to prevail. 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. 112.

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 more." 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's 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: 147 (cf. ib., 209, the original system). Lass himself, allows for "skip steps" 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.


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

27. To my knowledge, the first to propose that Macedonian /b, v/ (not δ) had a spirantized value, was Steinthal. In his explanation the systemic element is absent: "Wenn überliefert wird, daß die Macedoner δ statt griech. β, γ statt θ gesprochen haben, so heißt dies, daß, während die Griechen ursprüngliches δh zu θh, θh zu ph verzeichnet hatten, die Macedoner dieses Element bewahren, also der Urf orm treu blieben. Denn δ, θ werden von den späteren Grammatikern doch wohl als Aspiraten oder Spiranten genommen sein, so daß δ neugriechisches und spanisches δ, θ welches englisches δ bedeutet. Die Macedoner haben also höchstens die ursprüngliche mediale Aspirate und Spiranten wiedergegeben, während die Griechen die Tenais aspirata nur hatten Aspirata oder Spirantes machen" (1863: 404).

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

In Greek, the most significant phonological process seems to be the opening of the voiced stops. Its force has been extended even to the most 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. This appeared frequently as a departure from the norm, but in this new interpretation, on the contrary, its Greek character has been confirmed.

The asymmetrical system, exemplified with the dental shows the following pattern:

- stops
- voiceless
- voiced
- fricatives

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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 Phonology. 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 traditional. In present-day Modern Greek the phonemic situation is the following:

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The distribution is t: θ, e.g. *ta* /article, neut., plur./ - *tha* /particle to form future tense/.

d: ε, e.g. *dino* /dress (verb), clothes/ - *δινε* /give/.

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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, Maslov, Stanley and others. To earlier contributions cf. LEHMANN, 1993: 87 (4.4.3 "skewed system"), 97ff. (5.2.2ff. "infinity of b", "glottalic theory", etc.).


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 ("les de l'harmonie vocaile"). It is interesting to find that Zipf, too, writing at about the same time, detected "harmonic series" in language. He found English "a harmonic language nearly throughout its whole extent" (1935: 46, 215 (4)). To compare to this concept "psychological language" (ibid., 216).

33. Recently "New Greek" (NGk) in English: IEEE 750.

phonological system developed organically from the classical or even from an earlier stage? Allen’s diagram contrasting Latin and Greek, is both correct and misleading: 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: “…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’effets.” 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 change.” 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 language.

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. “Bur- rum”)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 reductions. Philological abbreviations follow mostly those of the Liddell - Scott - Jones lexicron for Greek, and of the Oxford Latin Dictionary (ed. P.W.G. Glare et al.) for Latin. Omissions are indicated

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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”.
38. MARTINET, 1989: 27. MARTINET, 2005: 2-3 (1.4), 4-5 (1.5) etc. writes also on causality.
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

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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 (“Systemzwänge”) 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, that 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 intensity (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’: “Übergang aus einer Lauschelle in eine andere bereits im System vorgesehen” (1893: 180 [478]).
42. Cf. MILLER, 1975: 308 and MARTINET, 1981: 174 (6.14, “buxus”, “gubernare”). The 8th edition of Millert’s Aperçu omits examples i.e., but earlier editions have “burrum”, 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 approximately triple extent as in Katonis, 2010.
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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 (Πόρρος): 2nd c. B.C.; Rome "Burrum" semper Ennius, nunquam Pyrrhus" (Cic. Orat. 160)

buxus (nύχος): 5th-6th c. A.D.; Constantinople "buxus" pro "nύχος" et 'publicus' pro 'puplicus'" (Priscian. Inst 1 26; Keil II 2019)

μπροντόν ([bar'don] «I beg your pardon»): modern; Modern Greece (colloquial)45

publicus (populus): 5th-6th c. A.D.; Constantinople "'buxus' pro "nύχος" et 'puplicus' pro 'puplicus'" (Priscian. Inst 1 26; Keil II 2019)

/l/: ὕπερκοδι (dórho): 4th c. B.C.; Sillyon (Pamphylia) "H(α) ὕπερκοδι (= -全国人大: = "hēρπες")" (DGP 315)

πρόδοντι47 (πράτω): c. 480 B.C.; Gortys (Crete) "οι δε κα με πρόδοντι" (IC IV 80;1)

σπεραντο (στράντ): 319/7 B.C.; Nesus48 (Lesbos) "απο τόν σπεραντον ελεογανήν τι σπέρναντες" (Del. 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 (burtus < nūrdos, buxus < nūχος, guberno < κυβερνάω). Zipp, too, mentions gubernare < kubernāō (1935: 65).

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

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

47. There is a very considerable number of related forms in Cretan material, like "πράτει (IC I, XXIII, 1, 3e, if not a spelling mistake), πρόδοντα (IC IV 809p), π ρόδοντα (IC IV 72: 136-37), πρόδοντα (IC IV 74 D2), [komp]δοντα (IC IV 87:13), and also forms like "καταδοθέν, διαρθόθέν", etc. Diver, 1958: 22 has the ut-ud development a Doric feature.

48. Today Μουρονίτας, east of Lesbos, opposite to ancient Cydonia (modern Alivat).
Weakening and Strengthening in Greek

σαδράσσαν (σαράσσαν); mid 3rd c. B.C.; Aranda (Agasta-Kale, Armenia Minor) "ιμώσκολο πόρος [...] σαδράσσαν κεφαλή τεται (Papavasilioni 273)"

tομφόδιασα (μάτια διάδονα): 17th c.; Cyprus "το είδα με τομφόδια μου" (Menardos 453)

κ/ Bάλλαμας (φαλακρός) 296 B.C.; Delos "τότε Βάλλαμας ήθελεν" (IG XI 2, 154A1)

ψηλάγιας (ψηλάγιας): 5th c. B.C.; Attica? "ψηλάγιας περιόδος έστειλε" (Hsch. G 213 L)


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

5a → 4b/5b² /t → d₂

/p/: — —

/t/: τζετσάκαπαν (τζετσάκαπαν): 5th c. B.C.; Tegea (Peloponnesos)

"Σάντα (πάνοι) θερίζω τα Φάληρα, μιά θαλαμάτι μνήμη άνφορον" (Del. 357 B2 = IG V 2, 15910)

τζιζζικασ (< τέττι): modern; Modern Greece (passim)

/θ/: — —

5b → 4b/5b² /b → d₂ /d → d₂ /g → g/

9b: — —

/θ/: τζετσάκαπαν (τζετσάκαπαν): 5th c. B.C.; Tegea (Peloponnesos)

"Δύσκολα (πάντο) θερίζω τα Φάληρα, μιά θαλαμάτι μνήμη άνφορον" (Del. 357 B2 = IG V 2, 15910)

τζιζζικασ (< τέττι): modern; Modern Greece (passim)

5b → 3b/5b² /b → d₂ /d → d₂ /g → g/


50. < g > is here, in all probability, the stop [d]. Compare with this form "φοθόνα" (= "φοθόνο"); personal experience in Nicosa, Cyprus, 15 September, 1999.

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

52. To "5a → 4b/5b", "5b → 4b", "5b → 3b" cf. Hatzidakis and Babiniotis, where affricates like /gθ/ /bθ/, /hθ/, and /θθ/, /θθ/ /θθ/ are supposed (HATZIDAKIS, 1924: 128, and BABBINOTIS, 1989: 10, 11 [19], respectively). See also Hampe who assumes affricates like /θθ/ for prehistoric Albanian (Historische Sprachforschung 1990: 292).

53. To "τζετσάκαπαν" and following modern "τζιζζικασ" cf. KRUMBACHER, 1886: 443 ("τζιζζικασ") and Foy, 1879: 56 with more examples like "τζιζζικασ", "τζιζζικασ" etc. As to the second form, Babiniotis thinks that there was an influence of the echoic "τζι τζι" (BABBINOTIS, 1996: 1784).

54. Or /g → 23g? 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. Yes Dubous, having not found recent references, informs me in a letter (16.1.2000) that "ο-ζετο ας τι διερεύνει απ' τον έπος τον γενεαλογικόν" (Hsch. A 213 L)

Bάλλαμας (φαλακρός): 296 B.C.; "τότε Βάλλαμας ήθελεν" (Delos IG XI 2, 154A1)

Βρού-ι κινώ-ι οκ (φρού-, φρούκος): 5th c. B.C.; Melos "Τυχόν-τίτα / Βρού-ι κινώ-ι οκ" (IG XII 3, 11404a, 4)


havet²/habet²/: 1st c. B.C.; Rome "seis quis havet nostro conferre dolore(m), la desit" (CIL I² 1222).

57. In majuscule written: < IIIPOY->. The sign <v> is thought to have had the value of a digamma or a spirantized <b> (Buck, 1955: 47 [31b]).

58. Cf. CIL IX 29286: "QVAE INIMIVS HAVENTES IN PECTORE NOSTRO SACRUM" (304 A.D.; Buc, Termoli,铵amit), and Italian avere.
Weakening and Strengthening in Greek

$
\theta\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\nu\n
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67. Like "ze-to", "ka-ro-pa" is tentative. Together with "Fipou" and "nepi", see following. (all three Cretan) seems to have the same phonemic process: opening of id/ with final deletion. "ka-ro-pa" 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.PA." With regard to "nepi", the recent edition of Hesychius by P.A. Hansen (H.) does not contribute new insights, except for bibliographic references which are, in reality, old. One reference is to Friese's etymological dictionary (GEW II 511) where further references to Schwyzer (1939), the other is to Thum - Kieckers (1932: 158). Schwyzer clearly argues in favour of a "spirantized" pronunciation of id/ as d with compensatory lengthening (Ersatzdehnung) leading to -er- (p. 286). To this we add p. 208 (d.), where a first suggestion for "6 als spirantisches d" in "nepi" is made. Thum - Kieckers (1932: 158 [141.20]) gives exactly the same explanation. See also p. 160 (141.27) where the authors argue that it was used in Dorian instead of 66, because the old 6 must have become d (cf. 6005 for 606p2). A couple like 66 would have been unclear. See also p. 189 (for d); and other instances of "spirantized" pronunciation are being discussed on p. 159.

68. See Radke (1965: 306-510) on this deity. The passage "id... diixere" is a subsequent interpolation.

69. "ouverpampe" is also an instance of gamma deletion.

70. Cf. "syrro" (ibid., 1712), and Lorenzatos, 1904: 222 ("syrro" without context). N.G. Politis cites this medieval proverb: "Ea se oukdo, fopre, K'd ivo se xalodo / I made you, even, I have to destroy you!" (Byzantinische Zeitschrift 7, 1896: 154).

71. "vopho" and following "vopho" are supposed to show deletion via the approximant /j/ (Graecum calls this a gliding [1977: 55], while still present in orthography, must have had the phonetic value of [j].

72. Cf. Karanikolas 4242 (Syme, modern) "Ev ev kouvoi krokoi: kai krokoi. "Ea" and "edou" are other instances of id/ and id/ deletion.

73. meidn and Meidn: cf. "Meischi".
Weakening and Strengthening in Greek

παύει (παύο-, πάο): modern; Modern Greece (passim)
στρατονύκτωσα (στρατηγός): 118 B.C.; Tebtynis (Fayyum, Egypt)
μετέδι ζωής στρατονύκτωσα μετέδι καὶ τῶν ἐπὶ κρείσσον τεταρτώ- ι γιγαντίως (Teb 5144)
οὐράλφιων (οὐραλφίων): 2nd-3rd c. A.D. Fayum (Egypt)
"δεῖθρων καὶ οὐραλφιων" (BGU 9067)
φάμε (τρόφω, φαγ-), subjunctive of 'eat': modern; Modern Greece (passim)

οὐράλφιων (οὐραλφίων): 5th c. B.C.; Bassae (Arcadia)
"οὐράλφιων / [οὐραλφίων]" (SEG 35 [1985] 345)
[οὐραλφίων (οὐραλφίων): 5th c. B.C.; Bassae (Arcadia)
"οὐραλφίων / [οὐραλφίων]" (SEG 35 [1985] 345)

2b → 1g → θ/

αὐθεία (αὐθια): mid 4th c. A.D.; Alexandria (Egypt) "ό παθίδα κυρίων Κυρίου αὐθείας μου το δένα" (Es. Le Sw) Apparatus criticus: αὐθεία Χ*

λέει (λέγε): end of 3rd c. A.D.; Oxyrhynchos (Egypt) "λέει Ωρ- 1.αν ή κληβανείς δι: ἀνεφάρον (= 'σον) μοι [...] τετρα- θάλα ρυγινον" (Oxy 1142a)

αὐθεία (αὐθια); modern; Modern Greece (passim)

λέει (λέγε): 4th c. B.C.; Boeotia "Χίρε κή χό το! υπ' αὐθεία! 'Ο τί λέει (= 'λέει;)" (Teyssier 136a) *

Τράτηλος (Τράτηλος): 422/1 B.C.; Acropolis (Athens)
"Τράτηλος" (IG I² 1, 7725 = IG I² 6414)

ὅπως (ὅπων): 156 B.C.; Memphis (Egypt) "Χορίζοι στο- δίαν καὶ τοῦ σώματος ἀποθήματος, ἀπ' ὑποτελείαν" (UPZ 64,14)

ΤΟΙΕΣ (τοιε): 321/20 B.C.; Acropolis (Athens) "[...] οὐκ ὑπήρεξ ἐκ τοῦ [...]" (IG II² B 147228, p. 78) Apparatus criticus: ΤΟΙΕΣ

74. Improved reading of Del.³ 445B.

2.2. Strengthening:

1 → 2b /θ/ → υ/ /θ/ → δ/τ/ /θ/ → υ/ /θ/

/θ/: Ἐνδέλχης (Ἐνδέλχης): after 300 B.C.; Sparta (Lacedaemon)
"Ἐνδέλχης Ὀλυμπιανός κύριος" (IG V 1, 649b)

Ἐνδέλχης- ἱππος (Ἐνδέλχης): c. 300 B.C.; Dodone (Epirus)
"Ἐπικοινωνία Ἐνδέλχης- ἱππος καὶ τὸν τὰς Ἀχαίας" (GDI 1582a, 2)

Ἐνδέλχης- ἱππος (Ἐνδέλχης): 5th c. B.C.; Rheneion (Lacedaemon)
"Ἐνδέλχης- ἱππος" (IG V 1, p. 210)

ὁρός (ὁραμ; ὦρη): c. 100 A.D.; Pampylia (Asia Minor)
"τοῦ Παμφυλίου δῆλος καῖρειν τὸ προτετάναι ἀτοκῶν φαντάσματος [...] ἃ [...] τὸ ὑπό οὗτος οὗτος τὸν Παμφύλιον καὶ τὸν Ἀχαϊον συνέχειαν τὸν Παμφύλιον καὶ τὸν Ἀχαϊον" (Hesych. M. 2616 C)

ὁρός (ὁραμ; ὦρη): c. 100 A.D.; Pampylia (Asia Minor)
"καὶ περιτειματίαν ἀπὸ οὗτος οὗτος" (Hesych. M. 2616 C)

/θ/: ke-sa-da-ra (Kassandra, Kassandria?): 13th c. B.C.; Pylos (Messenia) "ke-sa-da-ra GEA 5" (PY Fg 828)

/θ/: ἱσθῆλα (ἱσθηλα): 4th c. B.C.; Salamis (Paphlagonia) "πόλις ἱσθῆλα ΦΚΕΜΕΤΟΤΟ" (DPG 32a)

Ἀλιβάνος (Ἀλιβάνος): 2nd c. B.C.; Argos (Argolid)
"Ἀλιβάνος καὶ τούτων δοκεῖ σε πείσεις τούτοι δύναται τὴ γυναικὴ τοῦ Νόβηδος" (Plb. 13, 7, 7)

ἐκφόρησα (ἐκφόρησα): 2nd c. B.C.; Alexandria (Egypt) "κοινωνίαν καὶ τὴν ἐκφόρησαν" (WP 31 IV5, p. 186)


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

77. = Fexdail (Bouchar, 1976: 183 [23]).
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78. In Apulia (Italy) there is "γαλά" (ibid., ILNE p. 316). Several textbooks mention also – without context – the similar modern "γαλάς" (= "galá") e.g. Thrbm, 1964: 324. As to the latter, striking is the phonetically reversed form "νάλα" (= "nála") cf. al dejve, Lorenzoate, 1904: 222). Couldn't the Anc. Gk doiseot "άλα-"γάλα") found problematic by all etymological dictionaries, be explained, at least partially, with the type of a similar "νάλα"? Gontert thought of sentwrürdungten of the type a similar "νάλα"?: γάλα (1914: 126-127 (189), 219 (343)), but isn't equally possible to suppose a strengthening here? KEc 239 has only "αλα" 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. Gontert, 1914: 126 (189), citing Braggman. See, for the last time I have knowledge of Beeske (2010: 30, 253, 269-270) for αλα, γαλα, and γαλλικ respectively. There is a survey of recent bibliography, but Beeske does not give a solution either.

79. About fifty names of this type exist.
80. Cf. dpyla (Hsch.).
81. About twenty names of this type exist. Cf. also the name Tâl(e)lô ("Tabita") (Acts of the Apostles 9, 35-40).
82. Modern Kûm el-Charaba el-Kebir.

1 → 3b /0 → γ/

/0/: δαμάλια (δαμάλιον): 256/5 B.C.; Philadelphia (Fayum, Egypt) "tov dîmâ [... ἐν] μερίδω δαμάλια [sic] n" (PSI IV 4221)

84. Modern Kûm Ushûm.
86. For evidence of this form from other Greek islands cf. Krumbacher, 1886: 400, and Stephanos with several other examples like 
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 /e/.
89. No written example found. Detail of a Thessalian - Central-Greek (or "Rumelian") folk-song with the title "φέρε μου, φανταζά μου," I owe this context to the courtesy of Ilias Stias, folk dancer and dancing-master (personal communication, Olifatta, 5 February, 1999). The whole passage runs as follows: "φέρε μου, φανταζά μου, με να δοι σαν αδάμ μου με φέρε μπά, φέρε καπώ, για να μοι δώσω μια ναρα." Compare the following Campanian variant: "φέρε μου, φανταζά μου, με να πάμε με την άρτο μου [... φέρε μπά κα το καπώ, με να μοι δώσω μια ναρα."
90. Cf. 725 "δίψα, δι' αἰώνα νεός δίψα."
Weakening and Strengthening in Greek

3b → 5b /b/ → b //d/ → d //g/ → g/

/b/: μιμητάκιν (91) (βευμβαδ): modern; Modern Greece (passim)
/d/: δῆσα (δίσωμι): modern; Nikopolis Kolonias (Pontos, Asia Minor) (92)
/g/: γούμα (αλμ): modern; Apulia (Italy) (94)

5b → 5a (95) /b/ → p //d/ → t //g/ → k/

/b/: ποσνι(κκς) (βαυλικκς): 108 B.C.; Tebyinis, Fayûm (Egypt)
"ποσνι(κκς) [...] γης" (Teb 224)
/d/: ἔτοφιος (ἔδωρος): 2nd c. B.C.; Tebyinis, Fayûm (Egypt)
"Θεόσφορος ἄνδρα έτοφιος (= ἔδωρος) θεο(χ)" (Teb 8585)
/g/: moniκκου (μοστικ): 158 B.C.; Memphis (Egypt) "διαρικάν
με καί λεοντικοννυ (=} εμαστίγων)" (UPZ 1240)
πόρνον (πόρνος): end of 14th, beginning of 15th c. A.D.; Kyrenaia (Cyprus) "το μονοπάτι
βρίσκει τη στήθος Ρύοςος του
πόρνον" (EDT I p. 4437)

2.3. Weakening and Strengthening
in the same word

ὄτρηκαθι (cf. 2.1 above)
κατα (δίνω [δίσωμι]): modern; Karpathos (Dodekanesos) "κατα (= 'δίνω') μου χρυσόαχτηλή (96) με τό μαργαριτάρι" (EDT I p. 41513)
Γίω (δίνω [δίσωμι]): modern; Karpathos (Dodekanesos) "Γίω (= 'δίνω') [...] τ’ δέθος τῆς λεμονιάς" (EDT I p. 41512)

91. See BABINTCS, 1998(a): 351, 1142. I suppose that a process /b/ → b/ is much
time more probable than the preservation of an original stop. For a similar change between
Sanskrit and Hindi cf. ALLEN, 1965: 29, fn.
92. OECNOMIDES, 1958: 100.
93. HATZIDAKIS, 1892: 126, without context.
94. ILNE I 316, without context. Cf. vulgata above.
95. There is a considerable number of "confusions" of the type β-ν, δ-τ, v-κ
in the Egyptian material but also elsewhere (see e.g. MAYSER - SCHMOLL, 1970: 142-
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.
96. "χρυσόαχτηλή" /gold ring/ has two more instances of /d/ deletion: χρυσο-
[d]αχτήλη ([d]i)].
2.4. Weakening and Strengthening in the same context

...
Weakening and Strengthening in Greek

μου. Πλάνω πίσω πίσω έναν άλλον κι ήτο bolos meádo [-] ὃς εἶναι καὶ meáto sou" (Karanikolas 422 [2])103

3. Interpretation

"Ἀνάγκη οὖν συνεκές ἔχει καὶ τὸ αὖξων καὶ τὸ φθόνον, τῶν δὲ συνεκές σοδέν μετοξί."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.

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

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: 225-227.


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 “∅ → BC_D” could be applied e.g. to “διοςθεσ” or “γενο- | γνωστ” e.g., and “A → ∅C_D” to e.g., “διθον” or “Ελλεοροφόντες” 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. This recognition, again, could lead to Martinet’s principle about linguistic economy. “Economy” means, among oth-

107. For circularity cf. e.g. Atchison, 1991: 152, 156, 158. Lass (1974), just like Lass (1994) is skeptical (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), 84 (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); Zipf, 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-
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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"\(^{110}\).

At this point I would like to cite the view of Maddison 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."\(^{111}\)

The present research, however, and the experience of Greek, has not led to any contradiction or incomparability 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 satisfactorily.\(^{111}\)

Martinet's concept of the "structurally motivated pressure in a closed economic circuit" ("strukturendie 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 the "chain of facts" (ZIPF, 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).

90. 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 strukturendem Druck rechnen. Aber der allgemein wird dieser Druck in einem geschlossenen Kreislauf ausgelöst."). 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 [6.3.2. A iii,11], cf. to this KALMES, 1952: 322ff. (2.2).

See also preceding fn.

110 MADDEISON, 1992: 193. The present writer has not found anything that contradicts Martinet and supports Maddison. See KATOVA, 2010, p. 150.

111 See introducing remarks (1.1) on LABEFOGED - MADDEISON, 1996 and others.

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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 nihil*o, and perishing *in nihilum*. 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 *φοβος /φοβος > φοβος/*φόνος > φασις > φάγος* but, as far as I know, there is no more evidence to further trace *φάγος* where, theoretically, a later *fg* and *fl* could be expected. This is possible only "backward" where we arrive at the Indo-European etymology of the word (a supposed root *bheg*\(^{*}\), or *bheug*\(^{-}\)), while with other words we can trace the change *fg* > *fl*.

Much the same is the case of *φαβορ* seems to be that of Paphian *φαβη > *ασθή > *αφαί* \(^{114}\); and, on other grades, also *αζμα > *αζμα > *ανμα*. Similarly, there is no primary form *bēg*\(^{*}\),

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115. Krumbacher and others mention, without giving context, the dialectal form *bēg*\(^{*}\) with epenthetic *ι*; KRUMBACHER, 1885: 400; HATZIDAKIS, 1934: 420, 425;
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to parallel it with Ancient Greek "λογός/λογός (≠ λόγος)", although this word, too, must have had an intervocalic consonant originally116.

Some years ago the present writer was criticised for having superficially 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 private 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 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 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 "Μεθ-λιαν", "δίλαια", "διλον", "δίνοληγον" 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 μέντι έν 'Υπερβόλα διήπησεν τ' άνευ τοις γ' χρίσιν δέ βρά- l βαρον, λέγον οὗτος [...] ὀνόμα τ' εἰς εἰς καθί ο' 'δελον, 'διλον' [ἐλεγέν]"117 is not just an isolated attestation. Apollonius Dyscolus pleads for Beotian forms in this way: "Βοιωτοί <λόνον> [...]. λόνον (= 'with hyphaeresis')118 ἀνάλογον τοις γ' ἐντεινε, εἰς φανερον εἰς ἑπεράρειν τω τοῖς αναλόγων παραλογίσθεν"119. What exactly he means by "ἐλεγέν" we may learn from another section where he uses the cognate verb in a reversed sense: "ὁ στίκος ἀνάλογον [verb 'ἀνάλογον'], δέ ακαταθλίδην ἐκατον τ' αντα- l μυταναν"120. Herodianus went even as far as to label gamma deletion 'well-proportioned': "Τοιοντιοι κερι τοις γ' προφερόμενοι την λείαν ἀναλόγωτέρων ἀποφάσαντο, δόπερ 'Ριθουν ἐν δούλον Μελεάρω"121. These details suggest that the

117. Hdn. II 925b. See also pp. 1412 ("ὁλοκρούν"), 21 ("ὁλον") and 925p-29 (for the same word forms).

118. Since "ἐλαπέρον" always refers to vowels I would suggest to recognize the term "ἐλαπέρον" as the one which, in a certain sense, corresponds to modern constant '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 Lalliot, 2009: 38.

119. A.D. Pron. 64 B-C, 514 (Schneider - Uhlig). The teleology of this text should not engage our attention here.

120. A.D. Comp. 215 (Schneider - Uhlig).

121. Hdn. II 925a-26. Cf. I 1412b-21. On both pages, H. remarks that this pronunciation was 'ἀναλόγωτέρων' ('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 "technikos"). The exact understanding would be of great phonological importance. A recent study dedicated exactly to H.'s analogy (Slipper, 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",

OSKONOMIDES, 1958: 127; THUMB, 1964: 331. I have only found the vocative "χειλ". This supposes "χειλος" but social factors may prohibit a nominative like this. Consider the following passage in a 17th c. Cypriot Greek poem: "καὶ τόν ήσαν παρακολούθῃ καὶ τίνων ἐναντίον ἤπεφε, νά παίζει νά πάλαισον [...]", (Menadas 345-346).
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ancients became aware of deletion, while they were not, or only sporadically122 aware of opening. For a more exact interpretation of “ονοματοπους” 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 “Μικε” should be interpreted as [olgos], and why not without any audible consonant124.

The chains /lagos/ and /laos/ 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 [sens(t)s] bans [bæns(d)s]
cents [sent(t)s] bands [bænds(d)s]125

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.:

ψιδος (= ριδος) ↔ ριδος (= φιδος = θυσις, see fn. 78), or

αι ραμος > αραμος > αρόμος > βορομος (see lemma

ευσκευα) ↔ φοβος > φος > φονος (ib.).

Even more instructive appear the following:

/lagos/ (λαγος, Λαγος) → /lagos/ → /laos/ (see “ηαος”)

/laos/ (λαος, Λαος) → /laosi/126 (see “ηαος”) ↔ */lagos/.

The first is a weakening chain: “/lagos/” is the supposed primary pronunciation of the word ‘hara’ in Ancient Greek, “/lagos/” is the normal pronunciation in Modern Greek127. Dialectically the spirantized consonant becomes deleted: “/laos/”. Consonantal deletion could be called full opening128. The second is a strengthening chain: “/laos/” was the normal pronunciation of the word ‘people’ in classical Ancient Greek, except for Ionic-Attic dialect. With medieval “/lagos/”, development of an "irrational spirant" (i.e. a consonantal epenthesis), there is coincidence with the form having a spirantized (weakened) consonant. The third stage, “*/lagos/”, is a hypothetical form: further strengthening is predicted by the system but not evidenced, to my knowledge, by the linguistic material129.

126. With /ψ/ the anaptyxis of a spirant is meant. Phonetically this is the same as /g/ with which the opening of a stop /g/ is shown. See also KATONIS, 2010 I: 89-90.

127. For the notion of “Modern” w.s. See also KATONIS, 2010 I: 89-90.

128. Allen’s anti-economic term “complete assimilation to silence” (1962: 99) is instructive.

129. Such instances are, however, e.g. “μαρτων” (= μάρτων) (Cyprus, w.s.), “βολιοματις” (= βολυματις); θ > γ > θ > k (ORECONOMIDIS, 1958: 316; cf. p. 102), etc. Cf. THIBA, 1964: 12 (10.5) and KAISER, 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. Polybius’ judgement, which follows, is perhaps also in other respects the most pertinent to the purposes of this study: “(...) that the circle shows the commonwealth, and the political body, and the cities, and the states”. 

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), another is the circular AMTA change, supposed for Pelaggo-Hettite in comparison with other IE languages. 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 its links between NPh and StPh as in Katamba, 1989: 98-116.

Such is the cycle of political revolution, the course appointed by nature in which conditions 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 “δικαιολογεῖται”, “φύσις”, and “οἰκονομία.”


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a “cyclical movement” in it. 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 time. 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 > ραφτός > ραφτός”. Graphematically, this is a “vicious circle”. But the first form had an IE */pb/ becoming in classical Greek /p/
as result of an assimilation (a strengthening process in terms of StPh). Modern Greek has /t/ as a result of a dissimilation (a weakening process in terms of StPh); there never was an /t/ in the classical language. 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. Protosch, too, gives for Germanic, the following development, conceived by him circular: \( t > t' > P > \theta > b > d > d', t. \)

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 time. He was sceptical — approximately in the same sense as Drachman 1980 — about the "\( \psi \varphi \rho \varphi \varepsilon \)-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 /f/ and /uf/ "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's, and he found "very interesting" when I showed him instances like "\( \omega \kappa \omega \kappa \omega \)" and "\( \epsilon \nu \)" (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 "fais observables" and "vérification"! The OCP is wide-spread today. It was first developed in detail in the excellent book

137. Cf. the rendering of Gk <\( \phi \) as <\( \varphi \) in Latin. Forms as "\( \eta \mu \eta \pi \varepsilon \)" (CIL VI 28928) are extremely rare, while on the other hand, Latin forms like "\( \text{launpa} \), "\( \text{luamphi} \), "\( \text{nympha} \), "\( \text{nympha} \)" might have had something in common with Gk \( \text{ip}/. \) Cf. the word "\( \nu \varphi \rho \varepsilon \)" respectively (cf. CIL I 1624, with further literature). See also "\( \text{amphila} < \text{amphiro} < \text{amper} \) <\( \text{amper} \) <\( \text{ap} \varepsilon \) <\( \varepsilon \) <\( \psi \) (Rix, 1976: 85 [95]).

138. 1939: 51 (followed by Grimm's description and Protosch'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 (5.50, "La lénition à l'initiale").

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

by J. Goldsmith. 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 \( \text{E} \)conomic [...] is a landmark on the road towards a fruitful integration of the two methodologies [...]." 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-Tomaszczuk who, following Laslo's model found in his system philosophy, develops a spatial spiral model of language development. She also emphasizes dynamism and naturalness.

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 "\( \text{h} \text{o} \text{c} \text{o} \)" shows a bilabial approximant, i.e. the digamma: "\( \text{r} \text{a} \text{w} \text{a} \text{k} \text{e} \text{t} \text{a} \)" and "\( \text{r} \text{a} \text{w} \text{a} \text{ke} \text{si} \text{j} \text{o} \)". The term designates the lawagetas, the commander-in-chief of the "people under arms" (this is the original meaning of \( \text{h} \text{o} \text{c} \text{o} \)). How could the digamma be explained? According to the dictionaries, the etymology of...
this word is problematic. It might be a loanword in Greek. The most probable link seems to be that with Hittite *labha*-meaning 'war' or 'campaign'. This could also explain the Greek meaning 'people under arms'. As IE root, *labh-*, might be reckoned with (cf. Gk "Heia"). The root seems to mean 'gain', 'get', 'acquire'. The Hittite form as well as the long /ǔ/ in Gk "λαβός" (cf. Ionic "λαθῶ") render possible that the root once ended on a laryngeal. This is the first tangible case where an intervocalic consonant was deleted (a case of *weakening*). In terms of StPh the following digamma could be conceived as epanechetic (a case of *strengthening*). Deletion of the digamma in classical Greek is interpreted again as weakening, and medieval lαβo is, again, strengthening.

The string /λαβός/ → /λαθός/ → /λαθῶ/ → /λαθιο/ → /λαθό/, 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 pendulum movement, either, though something like this, too, would accord with the *dynamic* nature of language, but rather a succession with another alternating element in the same environment each time. This interpretation would also render unnecessary the remark "The derivative *teʰr̩jados [...] would appear to be regionally restricted to Greek and Phrygian". 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, *Laverna*, the Roman goddess of theft. It is also remarkable that the result of the openess is each time a spirant, not a stop! 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 factors. "Shuttle-movements" are not at all unknown in linguistics. Martinet (1955) posits such movements very clearly for several IE dialects, while in the original English paper on Italic consonantism (1950), he writes about a "general weakening" followed by a "general strengthening". 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 movements. The string
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"/lnHôs/ → /laôs/ → /lawôs/ → /laôs/ → /layôs/" 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 perfect. It cannot be answered here if the narrowing shape, reminding of a cone, is contingent. For this, more forms after "layôs/" would be needed. The stages, in any case, seem to follow some (diachronically) underlying rule. The other string is lesser and simpler: /laôs/ → /layôs/ → */layôs/.

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 Martinet. 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, too. 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 lenitions. 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 /l/ dropped, it was not possible to have it again, as occurs in many instances of spoken Gk.

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159. Windeken's idea, */Harôtfor Greek, and IE */yi/- with */a/-extension, meaning 'mass', 'band', perhaps does not contradict my interpretation (Windeken, 1986: 139).


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 SfP processes are confined only to consonants, Gk examples seem sometimes to support this assumption: like Modern Greek "pet/" (Bp) 'euch seem you' and 'well', 'just' in this development: /môrê/ → /môrê/ → /mbôrê/ → */ôbôrê/ → /ôbôrê/.

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proposing an analogical explanation for each case. Dropping-developing is well possible. One explanation of the cases like "diphùs" versus "dilkùs" in Ancient, and "o(d)ilôs" 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. 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: "συρέτω τι τό καθράδες των φωνευτων διάκρισιν [ανε] ό νοινικα της τοῦ ἑ προορθος". He is, by the way, who coined our term in the form of "καταρθάδες".

In the instance above, "nâvô to nêro to òkùl", a reappearance of the gamma is much more likely than its continuous retention (cf. e.g. "dîmò<rho>nuvoc" in a 2nd c. B.C. text, and "nâvô" in modern 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 development. 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 erkennen vermöge" (p. 122).


165. A.D. Pron. 63 B, 1.1. p. 1572-24a, 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. Egerer, 1987: 209ff. ("temporal 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: 42 [1.3.5.i]). The Alexandrianian A.D., a "difficult" teacher and writer, a "teknikos", seems to have been much more important than posteriorly generally assumes. He even may have foreseen the concept of modern Deep Structure. See a recent interpretation by Lallier (2009, with bibliographical) who thinks that "A's vast work awaits still deeper analysis and evaluation". As for his, Herodianus was equally a not unimportant grammarian.
Weakening and Strengthening in Greek

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 “Ταυροκόρος” (= Ταυροκόρος), “Σπανδήλιος”, “Νεόφανδος” 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 “μυθικόνημα”, “Ἀγνομένων” etc. did not appear convincing. There couldn’t be found a better explanation than either by analogy or by a tendency this writer draws the attention to, and well attested in Medieval and Modern Greek, the nasal epenthesis before stops, like “μαγκοφόρος” (attested as μαγκοφόρα 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 “τό γαρσόν” (pronounced [to gar’son]) instead of [to gar’son]. Greek, viewed as a vertical continuum, this proposal does not appear as daring to this writer. See Katonis, 2010 I: 156, where also “Ἀμφυπόκοφος”, “Ἀρόμφος”, “Θορμύβας”, and “Ορομύδας” (= Θορμύβας), (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. Babiniotis, 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”167. This is certainly true, and Martinet had already formulated before him

166. 1979: 143 (2.4). Dressler analyzes both the two notions, and the contribution by Dongen - Stampe (1983: 43ff. (4.3.3.1.ff.), cf. p. 41ff. To the “ease of articulation” by Lyman: 1975: 98 (3.4.4); Lass, 1984: 199 (8.6); Trask, 1996: 126.

167. I.e. “Ἀμφυπόκοφος: it occurs e.g. in a 4th c. B.C. Attic inscription (IG II² 10850). See Katonis (2010 I: 156 and II: 26) for examples and tentative interpretation.


169. In the same way would e.g. Modern Greek “μαγκοφόρος” [ma’qura] ‘stick, crook’ be explained. Cf. “μαγκοφόρος” (Hseh.).

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 “Burrum”, “buxus”, “publicus”, “ἀφθαρσία”, “οὐδέποτε”, “Βάλλαντα”, 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 intersonorant174 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 “ἈρδήBos” happen, again, to be intervocalic. Initial posi-

171. Cf. Martinet, 1955: 288 (11.41 [566]), also 109 (4.21, 4.22), 263-274 (11.10-11.21), and 1981: 59 (4.21, 4.22), 192-209 (6.49-6.75) in German, respectively.


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: 55-36 (3.2.1.2); Sonority Scale, as well as the Hierarchy itself, cf. Dressler, 1985: 55-36 (3.2.1.2); Hoog - McCully, 1987: 32-33 (2.2), 42 (2.4), 51 (2.5), 60 (2.2); Keating, 1988: 293-294; C. Lass, 1981: 257 (9.10); cf. Lass, 1984: 181-182 (3.2.2).

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

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 elsewhere. 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 Euphoniouc: “pís” and “pípis”. Instead of a “*pís”, 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 phonems as [i], [u], and [e] (p. 63). Could this mean that human speech began with fricatives? The order of these, by the way, unlike all other phones in the IPA chart, is fall (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 /i/ and /u/, (cf., the Neanderthal vocal tract was limited to labials and dentals, i.e. /h/ and /d/ (ib., p. 213). Could this throw some light on the problem of the “rare attestation” of /h/ in IE? Would /h/ have been in the process of a strengthening (after a first weakening), as supposed by some, through a different mechanism? IE /h/ → /θ/ 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 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 CARSTEN-MCCARTHY who /h/ in IE? Would /h/ have been in the process of strengthening (after a first weakening), as supposed by some, through a different mechanism? IE /θ/ → /f/ 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 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 CARSTEN-MCCARTHY who 216. Lieberman’s idea about the larynx is carried on by CARSTEN-MCCARTHY who 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” /s/ has been registered in Yalou (Cser. 2003: 81 [4.6.7]).


181. DRACHMAN ET AL., ib.


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

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 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 St/Pb 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 assymetrical PIE obstruct system. Strength movements, anyway, should not be excluded in the IE level, either185.

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

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 Romania, over an otherwise unknown Balkan population. He suggests calling the new population "Proto-Greeks bi" (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 soon. 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 processes. 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 dynamics.

sceptical. To problems of the IE obstruct system, a frequent object of research, cf. e.g. STANLEY, 1985: 39-40, 51-55; LEHMANN, 1993: 87 (4.4.3), 93ff, 137ff.
186. There is no place here to survey cases which have the phoneme /h/, like e.g. <βh βh> (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 stennes 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), 201 (12.8), 366 (13.64).

4.2. StPh, the frame of the above study, a “side issue” for over a century but an approach justified and reasonable, 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 “Στρομ”/’samon’ < ‘Samson’”, and further also “ιστροµα-ς” (’ismos’), “ιστροµα-ς” (’ismos’), etc., need to be explained satisfactorily. While Less 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 Features. 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 objections, StPh implications seem to be universal. Being a help to follow the vertical (historical)
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 "leθιβάς", the Anc. Macedonian /βθγι, or problematic word forms like "διθαλαθήν" (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 "θανατόλημος", "σοφινόλημος" 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

[52]. 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 (1964: 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", "fortilation", 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-Brügger gives on the relations between PIE, Mycenaean, Classical and Post-Classical Greek with the outcomes /b g d l p t k l/ if P χ, where, however, the new stops /b d g/ are missing (1992 II: 107ff.).

197. Several other contributions dealing with consonantal strengthening processes or related issues offer the same picture: Greek is either totally or almost totally absent, or, in the best cases, 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, Harris, Hickey, Hualde, Lavoi, Lindblom, Pierrehumbert, Segernal, Scheer, Udo, etc.

"Pre-Greek" Beekes is sometimes idiosyncratic. GEW and DELG are not really superseded 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 "κορυμβός", "κάρυκος" etc. were discussed already by Hatzidakis. Beekes' approach was able, in any case, to unite "κορυμβός" and "καρυφί", "κάρυκος" and "κάρυκος" 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 /mb/ appears in a separate set of phonemes. He then assumed that this "type of phonology" existed once in the whole Mediterrean199. 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 "μάνθος" (= "μεθός") are familiar from earlier contributions. In Argiroupoli, the North-Western suburb of Athens where this writer lives, one can observe on a large wall the name "Χαυρτακονοπαντή" (instead of "Χαυρτακονοπαντή"), 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. "Χαυρτακονοπαντή"? Whatever the case, the form reminds of quite recent borrowings already dealt with. The English word "detective" appears — according to Babiniotis' dictionary — as "ντετεκτίφτο" (the "normal" variant) and — "πολυδετεκτίφτο". Phonetically, the second "should" be [de'dektif]; however, prenasalization exists, too. [de'dektif] can or could also be heard: as this writer was informed by an elderly native speaker, [de'dektif] 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'somea]. This is a subjunctive (a coniunctivus aoristis) of the verb "ανείπω" with imperative sense, and orthographically goes as "όνομαμανα". In "normal" modern pronunciation this is supposed to be heard [edi'somea]. A following prenasalization has not been observed in this case
but a "[de'ektif]" must, logically, follow a previous "[de'ektif]", which, again, comes after "[de'ektif]". 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 [si'gru] and "Singrou" respectively. However, a transcription as "Singru" or "Singrou" 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 [oli'biados], for "Ολιβιάδος". Equally, "Αντηγουέδον" 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" ("Αντερκυλείσια") more than hundred years ago200, and something which reminds us of some 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 surprised 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 overwhelminng 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: 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-

200. For a recent analysis, see PETROUNIAS, 2015: 173ff., with more examples; and, with some inconsistency — since he discusses Classical Greek — PETROUNIAS, 2007 (a): 562.
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 beginning. 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.

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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 “askêtriai”, the second “a(ş)te'triai”, both “δοξάτριαι” (‘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.
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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.

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