

The contribution of Strength Phonology to the Greek Language

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Abstract

Strength Phonology, term and applying, goes back to Th. Cravens, R. Lass, J. Foley, and to a certain extent, P. Donegan and D. Stampe.

An attempt at applying this approach to Greek consonants follows some remarks of G.N. Hatzidakis in the 1920s who may have been inspired by Saussure.

The basic idea of the approach is that, according to the principles of Strength Phonology, segments can be hierarchically ordered with respect to their behavior in the phonological processes of lenition (weakening) and fortition (strengthening). It is an old observation that the first dimension is very important in Greek, and that this commonly corresponds to a direction of change in intervocalic position. It is argued here that Greek gives examples for bidirectional changes in the same environment and that these processes seem to be universal being part of a chain of consonant changes in which *openness* and *closeness* are equally essential. At the two ends of such chains deletion and epenthesis (insertion) can occur. For an environment 'intersonorant' is proposed rather than "intervocalic". Greek is understood in its diachronical entirety, dialectal variations comprised.

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I am going to tackle Strength Phonology with its possibilities when applied to Greek. Formerly, this tool was regarded as something controversial (e.g. by Crystal; Griffen, too, is a bit cautious, 1985: 136-137, although he, after all, accepts the phonological hierarchies). As far as I can see, however, the idea is not rejected. I will argue that Greek gives convincing examples for bidirectional changes in the same phonological contexts, i.e. in *intervocalic* or *intersonorant* environments which are thought to be the main weakening surroundings. In other words, this language is thought to provide enough examples to prove the correctness of a strength theory, and vice versa, such theory may be conceived to be suitable for adapting in the best way, perhaps exactly to Greek. What are the main points?

1. The heritage of Hatzidakis

The idea of investigating the voiced stops (/b d g/ > /β δ γ/) in Greek, i.e. the best examples for weakening or lenition, goes back to Hatzidakis. His contribution in general, is immense. It is a distortion when he is linked, as is usual, with the Katharevousa - Dhimotiki controversy only. He was interested in Greek in its entirety; indeed, with a main focus for Medieval and Modern Greek. It is enough to think of his famous *Einleitung* (first edition: 1892, and the last one: 1977), the *Ἀκαδημεικὰ Ἀναγνώσματα*, the *Μεσαιωνικὰ καὶ Νέα Ἑλληνικά*, and the *Γλωσσολογικαὶ Ἔρευναι*, just to mention a few titles.

He did not undertake a systematic investigation of the /b d g/ issue but encouraged posterity to do so: "Τούτων [i.e. β δ γ] ἡ λεπτομερῆς ἱστορικὴ ἔρευνα καὶ ὁ καθορισμὸς εἶναι κατ' ἐμὴν γνώμην καθῆκον ἡμῶν, οὐχὶ δὲ ἡ ἄρνησις τῶν γενομένων μεταβολῶν, θὰ νομίσω δὲ ἑμαυτὸν εὐτυχῆ, ἂν διὰ τῶν εἰρημένων δώσω ἀφορμὴν [...] εἰς τοιαύτας ἐρεύνας τῆς προγονικῆς ταύτης κληρονομίας"¹

2. Facts

The modern representatives of the older stops /b d g/ ({β δ γ}) are called "spirantized"² and the process of which they are the outcome is called traditionally *spirantization*, and more correctly "opening".

The respective terminology on the whole, still in the latest handbooks, is not standardized.³ I would suggest a system based on Lass (1984, Chapter 8.3) who unified, perhaps in the best manner, the terminology in question. Katamba's discussion, one of the best in our opinion, on naturalness and strength, is similar, and is very useful (1991: 98-116).

The terminology proposed:

opening (openness) - closing: preferably (but not exclusively) for the bidirectional movements of Greek /b d g/ ↔ / **ḃ ḋ ḡ** (indicating opening)/ /v ð γ (indicating insertion/consonantal epenthesis)/

¹ Hatzidakis 1924: 134(24).

² Although a designation like "opened" (αποκλειστοποιημένα), following the better term "opening" (instead of "spirantization"), would be more appropriate, still the old usage remains, whereas in modern textbooks the theoretical frame (weakening - strengthening) for these processes is ignored as in Bruce Hayes 2009. Hayes discusses shortly *spirantization* (pp. 42-43) and *fortition-lenition* (pp. 260-261).

³ Cf. Crystal 2008: 197.274.454 (*strengthening* and *weakening* are missing). Cf. also Hayes (2009).

lenition⁴ - fortition: partially synonyms of *weakening* - *strengthening*, preferably for Celtic processes (as in the work of Martinet)

weakening - strengthening: preferably the most generalized notions (weakening - strengthening: ⊂ lenition - fortition; opening - closing)

Strength Scales: comprise usually the consonants but some of them comprise also the vowels. (This idea is sound, think of Martinet's "circuit").

Synonyms or partially synonyms: *Lenition Hierarchies*, *Sonority Scales* etc.⁵

For an attempt at adapting the tool to Greek cf. Foley 1977, Cravens 1984 who corrects Foley and also introduces the term "Strength Phonology", and - without an attempt at Greek - Lass 1984 (mainly Chapter 8), where a systematizing and a very good terminology is offered, and Katamba 1991.

3. Discussion

At first sight, interpreting the *weakening-strengthening* issue could be reduced exclusively to an obvious paradigmatic imbalance in Ancient Greek (think of the distribution of the voiced versus voiceless stops on the one hand, and of the voiceless aspirates and voiceless stops again, on the other, where the voiced aspirates are missing (cf. Meier-Brügger 1992 II: 107-108, Petrounias 2007: 562.565, Botinis 2009: 69.82.92.). The ancient imbalance is perfectly eliminated in Standard Modern Greek (SMG). Sanskrit, too, is balanced inasmuch as it has also the voiced aspirates.

There is a *paradox*: whereas the phenomenon is known to be important in Greek, in general discussions such examples are frequently missing. The epoch-making book by Martinet (1955) says almost nothing on Greek whereas a good part of it deals with lenition and fortition. In his more recent *Sprachökonomie* he gives a small half-page chapter on Greek lenition (1981: 174 [6.14]). Kirchner (2004), and also in a quite recent paper on consonantal lenition (2008), gives no Greek examples, and I have not found such examples in Jonathan Barnes (2006) either. Kirchner (2001) is different. This book is rich and Greek is reckoned with, though in a strange fashion. The author writes on Ancient Greek (p. 321), and on Ptolemaic Greek (instead of "Hellenistic", following Teodorsson's book-title, p. 241), but he does not mention Modern Greek. All this means that, with regard to this language, the book is only partially at home in the matter. Perhaps my following suggestion is not in contradiction with his "effort-based" thesis.

Another paradox is that in Speech Science a systematic approach seems to be more fashionable to vowels than to consonants. This is the case e.g. in

⁴ Hamp 1990: 8, and before him others like e.g. Martinet.

⁵ Lass' and others' contributions show how phonological segments can be aligned hierarchically.

Pompino-Marschall (2003: 226) where we see very beautiful examples (up to a twenty-vowel system), but no such patterns in consonants are given, and with regard to Greek, the same thing is happening in Allen: the vowel treatment is exemplary (1987: 62 ff.) but nothing of the kind is given in consonantism. Some years ago, it was Babiniotis (e.g. 1998: 126-129) who directed attention to the missing dimension, and recently Botinis (2009: 69.92).

If we make one more step we find an impressive case which illustrates both the Donegan - Stampe thesis in Natural Phonology on corresponding processes⁶ and the fact that the Greek examples, if the language is considered as a whole, need something more than a recourse to the "asymmetry (Anc. Greek) to symmetry (Mod. Greek)" issue. Two words, suitable for an initial presentation, are SMG "λαός" ('folk') and "λαγός"⁷ ('hare', the animal *Lepus*). We can ignore their etymology, though it is characteristic that λαός had earlier an intervocalic consonant. In dialects something peculiar happened: λαγός (meaning the animal), having the original velar stop, first became normally /la_gós/ with velar fricative, and then it developed to "λαός" - i.e. the *same* environment worked - , e.g. on Keos (an island) according to Hatzidakis (1934: 422). The word "λαός" ('folk'), on the other hand, became "λαγός" (laγός) having developed a velar fricative, a consonant in the *same* environment, on Cyprus, again an island (Hatzidakis 1934: 425, Katonis 2001 I:167, II: 207).⁸ Krumbacher (1886) would have called this an "irrational spirant". As a parallel to "λαγός" ('folk'), I could mention the Pontic "φόγος" (= 'φόβος') which could come only through preceding "φόος" which is, indeed, also attested. The second development, i.e. "λαγός" ('folk'), could have proceeded to /g/, *lagós with a velar stop. I have no knowledge of such a form but other words like γαῖμα (= αῖμα, g < g) do exist. γαῖμα must have been developed through jaῖμα which also exists. An even better example is γαπάω (= 'αγαπάω', 'I love', cf. Hatzidakis 1892: 126, Katonis 2001 I: 191).

This single example (la[_g/γ]ós) shows both the way such an environment works and the fact that these possibilities have been exploited.

It was not only Hatzidakis who noticed such developments. More than a hundred years ago Panagis Lorentzatos in a paper with the title "Anamixis", 'Interminglings',⁹ discussed e.g. "γίδια" (= 'goats, kids') which developed to "ἴδια", and "ἴδια" (= 'the same', neuter plural) which became "γίδια".

On a theoretical plane, it was always emphasized that imbalanced systems, logically, tend to develop into balanced or integrated ones. This is the *symmetry* -

⁶ Their examples are "sense" [sen(t)s] - "cents" [sen(t)s], and "bans" [bæn(d)z]- "bands" [bæn(d)z]. They write on "insertion/deletion [...] dissimilation/assimilation in identical contexts" (143[2.4]), and remark: "almost every phonological process has a corresponding process with exactly opposite effects", "many derivations conjoin fortitions and lenitions" (1979: 153[3.2.1], underlining is mine).

⁷ Historically λαγός, although in Ionian also λαγός exists.

⁸ The two volume dissertation and a one volume updated copy of it are now in press.

⁹ "Ἀναμειξεις", *Athena* 16, 1904: 222.

asymmetry issue. Integrated systems are, then, as e.g. Szemerényi¹⁰, and for the last time I have knowledge of, Kümmel (2009) remarked, stable and resistant to further changes. It follows that neither Ancient Greek nor the preceding IE level must have been phonologically stable. SMG stability is, however, not so manifest if we regard Modern Greek as a whole. In its dialectical variations, the language does not appear always having a fully integrated consonant system, and even SMG supplies cases like "diaolos", "diaolokoritso", i.e. cases just exemplified, and cases where we encounter still more advanced deletions like "dialos", and - with regard to the laryngeal fricative gamma - "leo" (λέω) (cf. Babiniotis 2002: 477.489.996.1007). To this, the more popular "loos" (λόος) (= 'λόγος', Pontos) could be a clear parallel (Hatzidakis 1975: 335, Thumb 1964: 338). Hatzidakis gives several other related examples like "ἄάπη, ἄαθός, πυξι [= 'πυξίδιον']" etc.) (1975: 337-338). In papyrological material, however, already in the 4th c. A.D. an instance (λο<γ>ογράφου) seems to be attested (Katonis 2001 II: 214), and the Anc. Greek "ὄλιος" (=ὄλιγος) is almost banal (e.g. Threatte 1980: 440-441).

In the phonemic hierarchy of Lass which I find the best, consonantal weakening, a *natural* type of phonological change, is defined as a systematic reduction process which affects certain consonants, depending on their position within the word or the phonological phrase. The reduction, then, often results in subsequent *deletion*. His diagram in fact combines two scales: one of *openness* and one of *sonority*, where segments can move from one hierarchy to another. The hierarchy defines a set of coordinates for strength-changes: down and/or right is - in his terminology - *lenition*, up and/or left is *fortition*. In other words, it is *not* only about reduction, but Lass did not work out sufficiently this dimension. Input - he maintains - 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. As instances like "Burrum" (Πύρρος), "buxus" (πύξος), "publicus", "ἄτρεκᾶδι" (= 'ἠθρήκασι', ἄθρέω), "Βάλαγρος" (= 'Φάλακρος', φαλακρός) and many more¹¹, clearly show, the label "intervocalic" is not sufficient. The data I have found speak for an *intersonorant* environment. Logically, the environment, as is also implicitly shown by the Strength Scale, 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*.

Accordingly, in terms of StPh, opening of the voiced stops is just one stage in a much more complex strength system, and subsequent deletion is

¹⁰ "Such phonemes (i.e. integrated) are very resistant to change" (1968: 14).

¹¹ See e.g. Martinet 1955: 335(13.14), Meillet 1975: 28.273+, Katonis 2001 II:100+. It is probable that the sonorization of the Latin words show took place in the Greek source to these words.

explained satisfactorily as a further "right movement" stage in the same system. Since Strength Scales permit and presuppose two-directional movements, it is obvious that *opposite* processes like the insertion of an "irrational spirant", and also "hardening", have to be explained in the same terms. A "weak" segment, as a further "left"-direction process, may strengthen, which in an inverse case of opening might conveniently be labelled 'closing'. It follows then that Krumbacher's "irrational spirant" is not irrational and that it can be integrated into a three-insertion system where /b d g/ in spirantized or in stop forms appear in the same environment (for /b/ see e.g. χαμπλά [= 'low, low-lying', through "χαμλά" from χαμηλά], for /d/ ἄνδρα) etc.; several other examples in Katonis 2001 I: 188-191).¹²

4. Evaluation

Consequently, for the right direction movement of the basic issue, the opening of /b d g/, beside a pressure to symmetry, also natural strength developments (i.e. opening with subsequent deletion) seem quite obvious.

What triggers the opposite processes? Here questions may be raised although the hiatus¹³ removing mechanisms can be an explanation. This would be a first step. A further step as an "opposite" strength movement (i.e. *closing*) is not unparalleled either. *Verhärtung* or *hardening* is familiar with Germanic languages, and it has been suggested by Martinet even for the Indo-European level: a "laryngeal hardening" would have led to the Greek perfect formant -k-, i.e. -κα- as in Ancient Greek Present Perfect (e.g. πεπαίδευκα) which survives in Modern Greek aoristos. Such rightward - leftward movements are present in Greek anyway, even in morphology (cf. the πόλις → πόλη - πόλη → πόλης issue). Martinet made a suggestion for a "see-saw" (*coups de bascule*, 1955: 328[13.4]) in phonology beyond Greek. I would leave the question open but if it is true that related leftward movements are less numerous - and this seems to be the case -, another triggering factor, as Foley wanted, is necessary. This must be left to another discussion. But the pressure to symmetry must also have a role.

References

- Allen, W.S. 1987 *Vox Graeca*. A guide to the Pronunciation of Classical Greek. Third Edition. Cambridge etc.: Cambridge University Press
- Babiniotis, G. 1998 Γ. Μπαμπινιώτης, *Συνοπτική ιστορία τής ελληνικής γλώσσας*. Γ' έκδοση. Αθήνα: Ελληνικά Γράμματα

¹² A large number of non-Greek examples also exists: e.g. French *marbre*, English *marble*, the German name *Steindl* etc.

¹³ The corresponding Greek terms are "χασμωδία, σύγκρουσις". They do not occur until the Roman and Byzantine periods (Allen 1987: 96). Brixhe (1987: 40) introduces for such cases the term "glide antihiatu".

- 2002 Γ.Δ. Μπαμπινιώτης, *Λεξικό τής Νέας Ελληνικής με σχόλια για τη σωστή σχήση των λέξεων*. Αθήνα: Κέντρο Λεξικολογίας
- Barnes, J. 2006 *Strength and Weakness at the Interface*. Positional Neutralization in Phonetics and Phonology. Berlin - New York: Mouton de Gruyter
- Botinis, A. 2009 Α. Μποτίνης, *Φωνητική της Ελληνικής*. Τόμος Α'. Βασικές έννοιες φωνητικής και φωνητικά συστήματα. Αθήνα: Leader Books
- Brixhe, Cl. 1987 *Essai sur le Grec Anatolien au début de notre ère*. Nouvelle édition augmentée. Nancy: Presses Universitaires de Nancy
- Cravens, Th.D. 1984 Intervocalic consonant weakening in a phonetic-based Strength Phonology: Foley hierarchies and the *gorgia toscana*. *TL* 11, 3, [1985]: 269-310
- Crystal, D. 2008 *A Dictionary of Linguistics and Phonetics*. Sixth Edition. Malden, USA - Oxford, UK: Blackwell Publishing (©1980)
- Donegan, Patricia J. - Stampe, D. 1979 *The Study of Natural Phonology*. In *Current Approaches to Phonological Theory* ed. by Dinnsen, A., 126-173. Bloomington - London: Indiana University Press.
- Foley, J. 1977 *Foundations of Theoretical Phonology*. Cambridge etc.: C.U.P.
- Griffen, T.D. 1985 *Aspects of Dynamic Phonology*. Amsterdam/Philadelphia: Benjamins
- Hamp, E.P. 1990-91 Ancient Macedonian voiced and spirant obstruents. *Γλωσσολογία* 9-10: 7-8
- Hatzidakis, G.N. 1892 *Einleitung in die neugriechische Grammatik*. Leipzig: Breitkopf & Härtel (Nachdruck: Athens 1975, Hildeshem - New York, 1977)
- 1924 Γ.Ν. Χατζιδάκις: *Περὶ τῆς προφορᾶς τῆς Ἀρχαίας Ἑλληνικῆς*. Ἐν Ἴδ., *Ἀκαδημεικὰ ἀναγνώσματα εἰς τὴν ἑλληνικὴν καὶ λατινικὴν γραμματικὴν*. Τόμος Α'. Ἐν Ἀθήναις: Τυπογραφεῖον "Ἑστία".
- 1934 Γ.Ν. Χατζιδάκις: *Γλωσσολογικαὶ Ἔρευναι*. Τόμος Α'. Ἐν Ἀθήναις: ἐκ τοῦ Τυπογραφείου Βιτσικουνάκη
- Hayes, B. 2009 *Introductory Phonology*. Malden, MA etc.: Wiley-Blackwell
- Katamba, F. 1991 *An Introduction to Phonology*. London - New York: Longman, (©1989)
- Katonis, A.L. 2001 Α.Λ. Κατώνης, *Αποκλειστοποίηση των κλειστών /b d g/ της Ελληνικής*. Διαχρονική φωνολογική προέγγιση. Διδακτορική διατριβή. I: Ανάλυση με Παράρτημα I, II: Παράρτημα II: Σώμα Υλικού (Corpus). Αθήνα: Πανεπιστήμιο Αθηνών, Τομέας Γλωσσολογίας
- Kirchner, R. 2001 *An Effort Based Approach to Consonant Lenition*. New York - London: Routledge
- 2008 Consonant lenition. In *Phonetically Based Phonology*, ed. by B. Hayes - R. Kirchner - Donca Steriade 313-345. Cambridge: University Press (©2004)

- Krumbacher, K. 1886 Ein irrationaler Spirant im Griechischen. *SBAW* 1886: 359-444
- Kümmel, M. 2009 *Idg. Phonologie und Morphonologie*. Five lectures given at the Freie Universität, Berlin-Dehlem (6th Indo-European Dahlem Summer School. Week I.) 31.08.2009-04.09.2009.
- Lass, R. 1984 *Phonology*. An Introduction to Basic Concepts. Cambridge - New York, etc.: C.U.P.
- Martinet, A. 1955 *Économie des changements phonétiques*. Traité de phonologie diachronique. Berne: Éditions A. Francke S.A.
1981 *Sprachökonomie und Lautwandel*. Eine Abhandlung über die diachronische Phonologie. Aus dem Französischen von Claudia Fuchs. Stuttgart: Clett-Cotta
- Meier-Brügger, M. 1992 *Griechische Sprachwissenschaft*. I: Bibliographie. Einleitung. Syntax, II: Wortschatz. Formenlehre. Lautlehre. Indizes. Berlin - New York: Walter de Gruyter
- Meillet, A. 1975 *Aperçu d' une histoire de la langue grecque*. Avec bibliographie mise à jour et complétée par O. Masson. Paris: Klincksieck (8^e édition)
- Petrounias, E.B. 2007 The pronunciation of Classical Greek. In: *A History of Ancient Greek. From the Beginnings to Late Antiquity*, ed. by A.-F. Christidis, 556-570. Cambridge: University Press
- Pompino-Marschall, B. 2003 *Einführung in die Phonetik*. 2., durchgesehene und erweiterte Auflage. Berlin - New York: Walter de Gruyter
- Szemerényi, O. 1968 Methodology of genetic linguistics. In *Methoden der Sprachwissenschaft*, ed. by H. Schnelle - H. Frei, R.H. Robins, O. Szemerényi, E. Zwirner and K.H. Rensch, 3-38. München - Wien: R. Oldenburg Verlag.
- Threatte, L. 1980 *The Grammar of Attic Inscriptions*. Volume One: Phonology. Berlin - New York: Walter de Gruyter
- Thumb, A. 1964 *A Handbook of the Modern Greek Vernacular*. Grammar, Texts, Glossary. Chicago: Argonaut, Inc. Publishers