

# The contribution of Strength Phonology to the Greek Language

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## Abstract

Strength Phonology, as a term and as practice, goes back to Th. Cravens (1984), R. Lass (1984), J. Foley (1977), and to a certain extent, P. Donegan and D. Stampe (1979). An attempt to apply 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, the term 'intersonorant' is proposed rather than "intervocalic". Greek is understood here in its diachronic entirety, dialectal variations comprised.

## 1 Introduction

I am going to tackle Strength Phonology with its possibilities, when applied to Greek. This tool has been formerly regarded as something controversial (e.g. by Crystal 2009; 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?

## 2 The heritage of Hatzidakis

The idea of investigating the voiced stops (/b d g/ > /β δ γ/) in Greek—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 on Medieval and Modern Greek. It is enough to think of his famous *Einleitung* (first edition in 1892, last in 1977), *Ακαδημεικὰ Αναγνώσματα, Μεσαιωνικὰ καὶ Νέα Ἑλληνικά, Γλωσσολογικαὶ Ἐρευναι*, 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 λεπτομερὴς ἱστορικὴ ἔρευνα καὶ ὁ καθορισμὸς εἶναι κατ' ἐμὴν γνώμην καθήκον ἡμῶν, οὐχὶ δὲ ἡ ἄρνησις τῶν γενομένων μεταβολῶν, θὰ νομίσω δὲ ἑμαυτὸν εὐτυχῆ, ἂν διὰ τῶν εἰρημένων δώσω ἀφορμὴν [...] εἰς τοιαύτας ἐρεῦνας τῆς προγονικῆς ταύτης κληρονομίας"<sup>1</sup>

### 3 Facts

The modern representatives of the older stops /b d g/ ( $\{\beta \delta \gamma\}$ ) are called "spirantized"<sup>2</sup> and the process of which they are the outcome is called traditionally *spirantization*, and more correctly "opening".

The respective terminology on the whole, even in the latest handbooks, is not standardized.<sup>3</sup> 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 very useful (1991: 98–116).

#### The proposed terminology:

- opening (openness) - closing: preferably (but not exclusively) for the bidirectional movements of Greek /b d g/ ↔ /β δ γ (indicating opening)/ /v ð γ (indicating insertion/consonantal epenthesis)/
- lenition<sup>4</sup> - 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 include also the vowels. (This idea is sound, think of Martinet's "circuit").
- Synonyms or partially synonyms: *Lenition Hierarchies*, *Sonority Scales* etc.<sup>5</sup>

<sup>1</sup> Hatzidakis 1924: 134(24).

<sup>2</sup> 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 Hayes (2009). Hayes discusses shortly *spirantization* (pp. 42–43) and *fortition-lenition* (pp. 260–261).

<sup>3</sup> Cf. Crystal 2008: 197, 274, 454 (*strengthening* and *weakening* are missing). Cf. also Hayes (2009).

<sup>4</sup> Hamp 1990: 8, and before him others like e.g. Martinet.

<sup>5</sup> Lass' and others' contributions show how phonological segments can be aligned hierarchically.

For an attempt at adapting the tool to Greek, see Foley 1977, Cravens 1984 (who corrects Foley and also introduces the term "Strength Phonology"), and without attempt at Greek, Lass 1984 (mainly Chapter 8), where a systematizing and 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 (*Économie* 1955) says almost nothing on Greek, although 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]). Robert Kirchner (2001, 2008), in a quite recent paper on consonantal lenition, gives no Greek examples, and I have not found such examples in Jonathan Barnes (2006) either. Kirchner (2001, *An Effort Based Approach to Consonant Lenition*) is different. This book is rich and Greek is reckoned with, though in a strange fashion. Kirchner writes on Ancient Greek (p. 321), and on Ptolemaic Greek (instead of "Hellenistic", following Teodorsson's 1977 book-title, see Kirchner 2001: 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 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 (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 and Stampe thesis in Natural Phonology on corresponding processes (1979)<sup>6</sup> 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,

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<sup>6</sup> 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" (153[3.2.1]).

are SMG "λαός" ('folk') and "λαγός"<sup>7</sup> ('hare', *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 /lagós/ with velar fricative, and then it developed to "λαός"—i.e. the *same* environment worked—, e.g. in the island of Keos, according to Hatzidakis (1934: 422). The word "λαός" ('folk'), on the other hand, became "λαγός" (λαγός), having developed a velar fricative /i.e. laγós/, a consonant in the *same* environment, in Cyprus (Hatzidakis 1934: 425, Katonis 2001 I:167, II: 207)<sup>8</sup>. 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 also attested. The second development, i.e. "λαγός" ('folk'), could proceed 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, cf. Hatzidakis 1892: 126, Katonis 2001 I: 191).

This single example (la[g/γ]ós) shows both the way in which 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',<sup>9</sup> discussed e.g. "γῖδια" (=goats, kids), which developed to "ῖδια" and "ῖδια" (=the same, neuter plural), which became "γῖδια".

On a theoretical plane, it was always emphasized that imbalanced systems, logically, tend to develop into balanced or integrated ones. This is the *symmetry* - *asymmetry* issue. Integrated systems are, then, as e.g. Szemerényi<sup>10</sup>, and for the last time I have knowledge of, M. 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 "άάπη, άαθός, πυξί [ =πυξίδιον]" etc.) (1975: 337–338). In papyrological material, however, already in the 4th c. AD, an instance (λο<γ>ογράφου) seems to be attested (Katonis 2001 II: 214), and the Anc. Greek "όλίος" (=όλίγος) is almost banal (e.g. Threatte 1980: 440–441).

<sup>7</sup> Historically λαγός, although in Ionian also λαγός exists.

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

<sup>9</sup> "□ναμείξεις", *Athena* 16, 1904: 222.

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

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", "ἀτρέκᾱδι" (= ἠθρήκασι, ἀθρέω), "Βάλαγρος" (= "Φάλακρος", φαλακρός) and many more<sup>11</sup>, 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 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 labeled '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).<sup>12</sup>

#### 4 Evaluation

Consequently, for the right direction of the basic issue, the opening of /b d g/, aside from a pressure towards symmetry, is also a natural strength developments

<sup>11</sup> See e.g. Martinet 1955: 335(13–14), Meillet 1975: 28, 273–274, Katonis 2001 II: 100–101. It is probable that the sonorization that the Latin words show took place in the Greek source to these words.

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

(i.e. opening with subsequent deletion). What triggers the opposite processes? Here questions may be raised, although the hiatus<sup>13</sup> 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 at the Indo-European stage: a "laryngeal hardening" would have led to the Greek perfect formant -k-, i.e. -κα- as in Ancient Greek Present Perfect (e.g. *πεπαιδευκα*), 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.

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<sup>13</sup> The corresponding Greek terms are "χασμιά, 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".

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