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Λέξεις-κλειδιά: *athematic inflection, thematic inflection, thematic vowel, thematicization,
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DIACHRONIC CONSONANT LENITION & EXOTIC WORD-INITIAL CLUSTERS IN GREEK: A UNIFIED ACCOUNT

Résumé. Cet article met en relation deux originalités du début de mot grec : la première est que la position #_ (début de mot) est, pour les consonnes, une position fragile en grec, alors qu'elle est forte dans la plupart des langues indo-européennes. Cette spécificité se révèle dans la diachronie des obstruantes entre l'époque classique et le démotique moderne, phénoménologie qui doit être interprétée comme une lenition soumise à des positions "fortes" et "faibles" et non, comme de coutume, en termes de dissimilations. La seconde originalité, depuis longtemps remarquée, est l'existence de séquences consonantiques hétérosyllabiques en début de mot. L'analyse établit, grâce à une enquête sur la définition phonologique du début de mot en grec et dans les langues en général, que les deux originalités grecques, apparemment sans relation, dépendent en fait d'une même cause.

1 Introduction

In word-initial position, consonant clusters are of rising sonority (obstruent-sonorant) in most Indo-European languages (IE). This is the case, among others, for Sanskrit, Romance and Germanic. In these languages, clusters of non-increasing sonority that do occur word-internally are banned from the beginning of the word.¹ This distributional situation by far exceeds IE. It is generally considered to be a universal feature of phonological systems, even though massively contravening languages are reported from both inside (Greek and many Slavic languages such as Polish, cf. Rubach & Booij 1990) and outside IE (modern occidental Afro-Asiatic such as Moroccan Arabic or Berber).

The restriction at hand is usually granted a syllabic account: word-initial clusters are supposed to be homosyllabic, while both homo- and heterosyllabic sequences occur word-internally. This characterisation ties in with the fact that only clusters of rising sonority qualify for homosyllabicity. As a matter of fact, Greek disregards both the typological and the theoretically relevant regularity: there exist words with initial clusters of non-increasing

sonority (classical $\pi\acute{\tau}\epsilon\rho\omega$, $\chi\theta\acute{\epsilon}\varsigma$, modern $\gamma\delta\acute{\upsilon}\nu\omega$, $\beta\gamma\acute{\alpha}\lambda\omega$ etc.). Those "exotic" sequences are various (pt, kt, bd, ft, xt, $\gamma\delta$, mn, etc.), occur in many roots, and they are perfectly native (i.e. not loans). Therefore, Greek does not offer any reason for declaring these clusters exceptional. They are fully integrated into the phonological system, both diachronically and synchronically. In addition to their non-increasing sonority, the phonological behavior of these clusters provides excellent reasons to believe that they are not homosyllabic.

A classical argument (see for example Steriade 1982: 301-373, Kaye 1992: 298-299) in support of this view concerns the formation of the classical Greek perfect: as can be seen under (1), the sequences under focus do not behave like true homosyllabic clusters at all.ⁱⁱ

(1) Classical Greek perfect

(a) Reduplication	(b) No reduplication
luo - léluka	ptaio - eptaika *peptaika
paideuo - pepaideuka	$p^h t^h$ ano - $ep^h t^h$ aka * $pep^h t^h$ aka
grapho - gegrapha	
pleo-pepleuka	

The derivation under (1)(a) regularly produces the reduplication of the root-initial consonant irrespectively of its nature. In case there is a homosyllabic root-initial cluster, reduplication affects only the first consonant. However, nothing is reduplicated if the root begins with two obstruents (1) (b). Therefore, [pt] cannot be regarded as a homosyllabic cluster. Its actual syllabic identity is further discussed in section 3. For the time being, the reader just needs to bear in mind that both consonants of Greek initial clusters such as #pt- do not belong to the same syllable.

Why does Greek tolerate heterosyllabic clusters at the beginning of words? What is their syllabic representation? Which is the parameter that allows for an augmented distributional latitude in Greek?ⁱⁱⁱ In order to answer these questions, let us look at another peculiarity of the language: the context #_V is "weak" in Greek, while it is "strong" in a great many languages, amongst which most of IE.

2 $\phi\theta\iota\nu\omega$ - $\phi\tau\iota\nu\omega$: weakness and strength versus dissimilation

The weakness of consonants in #_V emerges when the evolution of obstruents from Classical to Modern times is looked at from a syllabic point of view. According to this line of thought, modern demotic forms such as $\chi\acute{\tau}\epsilon\varsigma$ [xtes], $\kappa\acute{\lambda}\epsilon\phi\tau\iota\varsigma$ [kleftis], which correspond to classical, $\chi\theta\acute{\epsilon}\varsigma$ [$k^h t^h$ es], $\kappa\acute{\lambda}\epsilon\pi\tau\iota\varsigma$ [kleptes], are the result of a weakening process that has affected consonants at various degrees according to their position in the string.

This interpretation challenges the dominant view according to which the modern demotic forms quoted are the result of a segmental reaction against the cohabitation of obstruents that share the same manner of articulation. This process is called dissimilation. Along these lines, Holton & al (1997:18) for example write that "a consonant cluster with two voiceless fricatives or two plosives is disallowed". The same account is advocated in among many others, Mirambel (1995: XVI-XVII), Tonnet (1993: 70-71), Teodorsson (1977: 239).

The concurrent syllabic perspective holds that the evolution of Greek obstruents is part of a larger phenomenology known from other languages: consonants are subject to

lenition according to their position in the string. I show below that the insertion of Greek into this more general picture allows to gain insights that would otherwise remain obscure.

2.1 The theory of Dissimilations

The evolution of obstruents from Classical Greek to the modern language is usually given the following account. Among the three series of classical stops (voiceless p, t, k, aspirated p^h , t^h , k^h , voiced b, d, g), aspirated and voiced stops became fricatives in a context-free change (around 3rd BC for voiced, 2^d- 4th AD for aspirated stops). That is, b turned into v, p^h became f, but p remained p.

At a later time (11th- 14th AD according to Browning 1983: 76), the two voiceless series (i.e. fricatives from classical aspirated stops and the unchanged plain voiceless stops) were affected by another process, i.e. dissimilation. Two contiguous voiceless stops underwent dissimilation of their manner of articulation in such a way that the first obstruent became fricative: [kleptis] > [kleftis] "thief". According to the same principle, a cluster of two contiguous fricatives is disallowed and therefore turns into a fricative-stop sequence: [xθes] > [xtes].

In sum, the common analysis invokes three phonological processes:

- ✓ a context-free spirantisation that affects two series;
- ✓ a (medieval) progressive dissimilation of clusters of voiceless fricatives ($f\theta > ft$);
- ✓ a regressive dissimilation of clusters of voiceless stops ($p > ft$).

A number of objections may be raised against this view. For one thing, it can hardly be claimed that Greek is particularly incline to dissimilate the manner of articulation of adjacent consonants.^{iv} On the contrary, there are numerous cases where contiguous consonants assimilate. This is witnessed both morpheme-internally and across morphological boundaries. Within roots, pt, bd are permitted, but *pd, *bt are outlawed (e.g. Bubenik 1980: 89-93). Through boundaries, consider the following examples:

- Classical Greek : $\tau\rho\acute{\iota}\beta\omega$ - perfect medio-passive 3sg $\tau\epsilon\tau\rho\acute{\iota}\phi\theta\omega$, 2pl $\tau\epsilon\tau\rho\acute{\iota}\pi\tau\alpha\iota$.
- Post-classical Greek: $\gamma\delta\acute{\upsilon}\nu\omega$ (from $\epsilon\kappa + \delta\acute{\upsilon}\nu\omega$).

Moreover, dissimilation cannot account for medio-passive aorist forms such as $\lambda\epsilon\acute{\iota}\phi\tau\eta\kappa\epsilon$ 'was lacking' (present active $\lambda\epsilon\acute{\iota}\pi\omega$, suffix - $\theta\eta\kappa\epsilon$ cf. $\alpha\gamma\alpha\pi\alpha\omega - \alpha\gamma\alpha\pi\eta\theta\eta\kappa\epsilon$ "to like"). Holton & al (1997: 9) mention the following derivation as an instance of dissimilation:

(2) /lip-θ-ike/ > [lif-t-ike] $\lambda\epsilon\acute{\iota}\phi\tau\eta\kappa\epsilon$ 'was lacking'.

Were there such a thing as a constraint « a consonant cluster with two voiceless fricatives or two plosives is disallowed » (Holton & al 1997: 18), the sequence [pθ] should be perfectly well-formed. Hence, nothing is wrong with the alleged underlying form, and the changes that affect both the labial and the dental segments beg the question.

This section has shed light on two shortcomings of the commonly received dissimilation analysis. The alternation $\lambda\epsilon\acute{\iota}\pi\omega - \lambda\epsilon\acute{\iota}\phi\tau\eta\kappa\epsilon$ invalidates an account along these lines. But it is also true that this example hints at the fact that Greek "prefers" fricative-stop sequences over any other obstruent cluster. Why should that be so? Let us approach this phenomenology under another angle, i.e. a weakening phenomenon. It will appear that all facts discussed so far fall in place under this assumption: the three series of classical stops did or did not spirantise depending on the weak or strong position they occur in.

2.2 Weak & strong positions

The fact that the position of segments in the linear string plays a role in their evolution is firmly established since the 19th century, foremost in the Romance literature. Fourquet (1956: 52-54) applied this line of thought to the evolution of Classical Greek obstruents, but he evolved in a non-syllabic framework. In this section, I aim at showing that his fundamental insight is taken full advantage of only when it is inserted in a syllabic environment. I compare the Greek situation with the diachronic evidence from two other IE branches, i.e. Germanic and Romance. Under (3), consider the fate of Latin and Common Germanic stops in French and German, respectively. At this stage of the discussion, the word-initial location is intentionally left aside; it is crucial for the argument and will be examined in a second step. The three contexts examined are C_, V_V and _C.

(3) Evolution of stops in Greek, Germanic and Romance^v

">": weakening (lost of occlusion or deletion)

"=": occlusion maintained

a. LATIN – [French]			
	C (after cons.)	V V(intervoc.)	C (before cons.)
p	TALPA-topə	RIPA-rivə	RUPTA-rutə
t	CANTAR-ʃāte	VITA-viə	PLAT(A)NU-plan
k	RANQOR-rākər	LACTUCA-lətuə	FACTA-fetə
b. Common Germanic (English) – [German]			
p	carp-karpfən	pope-pfafə	
t	salt-salts	hate-hasən	
k	thank-danjke	make-maχən	
	=	>	>
	Strong Position	Weak Positions	

c. [Classical Greek] - [Modern Greek] ^{vi}			
	C (after obst)	V V	C(before obst.)
voic.	ogdoos ὀγδοος oγδος >	bebea βέβαια vevea >	rabdos ράβδος ravdos >
+asp.	ok ^h t ^h ε ὀχθη oxti =	lop ^h os λόφος lofos >	ok ^h t ^h ε ὀχθη oxti >
-asp.	okto οχτώ oxto =	epeide επειδή epiði =	epta εφτά efta >

d. Summary Greek evolution			
voic.	>	>	>
+ asp.		>	>
- asp.			>
	Strong	Frail	Weak

As may be seen under (3) c., the three series weakened in _C, and two series weakened in V_V, which are typical weak positions, while only one series weakened in the famous Strong position C_. So, Greek's scale of relative strength which is fleshed out under (3) d. corresponds to the famous Weak & Strong positions of Germanic & Romance: the strong and the weak contexts are respectively the same^{vii}, (strong C_ on the one hand, weak V_V and _C on the other hand) and the aspirated series truly reproduces the Roman and Germanic pattern. In addition, the Greek pattern allows to discriminate between the two weak positions that are treated on a. by Germanic and Romance: in the latter branches, stops show the same lenition in V_V and _C. Greek witnesses that _C is relatively weaker when compared to the V_V, and this is demonstrated by the behavior of the most resistant series (plain voiceless stops). In order to differentiate both weak positions, I shall call the V_V context "frail", while _C is "weak" (both are opposed to the "strong" position C_).

Up to this point, the relevant contexts have been identified by their adjacent segments: C_, V_V and _C. Section 3 provides a syllabic interpretation thereof and presents the theoretical framework in which the analysis is couched. Before we can turn to this part, however, one point needs to be clarified. The attentive reader will have noticed that I do not consider [oxti] to be the output of [oxθε], which is common practice. Rather, I propound it to directly derive from classical [ok^ht^hε]. A number of arguments in favour of this analysis are developed in the following section.

2.3 [ft] does not originate in [fθ]

In section 2.2, the evolution p^ht^h>(ft^h>)ft replaces the commonly accepted p^ht^h>fθ>ft. In other words, I propose that classical "θ" [t^h] remained occlusive after another obstruent by the time it spirantised in other contexts.

Spirantisation of classical aspirates is witnessed by comparatistic evidence in various contexts: Latin transcriptions "Efestiona" (Ἐφαιστίονα), "Fyllis" (Φυλλίς) show that in intervocalic and initial position, classical φ was not a stop anymore around the 1st- 4th century AD: had a stop been heard, Roman scripts would have used the grapheme "p". Also, Greek graphic alternations "αυ" – "αφ" in the same period embody the fact that "φ" had lost its occlusion in _C as well. However, there is no evidence of either comparatistic nor graphic nature that hints at spirantisation in C_ position. The spelling "φθ" does not ascertain that "θ" was fricative in this position. For one thing, it might still have been unchanged [t^h]. In that case, aspirated stops had not yet merged with the non aspirate "t", and could therefore not be transcribed by the latter grapheme. But even if "θ" had already lost aspiration at that time, the writing "φτ" would have contravene the traditional spelling. Considering that we deal with the period of the beginning Atticist movement, such anti-classical innovation is unlikely. In the following centuries, writings of popular nature went missing (Tonnet 1993: 49). Therefore, it does not come as a surprise at all to observe that the transcription "φτ", which is first recorded around the 11th century AD (Browning 1983: 76, Tonnet 1993: 70), did not appear earlier.

On the other hand, looking at the facts along the lines of Weak & Strong Positions can account for some spellings of the period 2nd century BC - 1st AD. Recall from the previous section that consonants in _C are weaker than in V_V (which I called "frail"). It would be perfectly consistent with this view on the matter if consonants in the weaker position _C

had been affected by spirantisation before their peers in intervocalic context V_V had been touched. This scenario is supported by actual fact, as is shown below.

For one thing, early lenition in _C could explain the writing “εικθύν” ‘fish’ for classical “ιχθύν” (Papyrus Fayum 114, 1st AD). According to Tonnet (1993: 39-41) this spelling transcribes a stop-fricative sequence [ikθyn]. This [kθ] is supposed to be the result of a regressive dissimilation of fricatives, i.e. [ikθyn] < [ixθyn]. But Tonnet himself wonders at this dissimilation which shows opposite directionality with respect to the supposed medieval progressive dissimilation. Now consider the alternative reading [ixt^hyn], which can be viewed as the result of spirantisation in the weakest context _C on the classical input [ik^hθyn]. Under this analysis, the grapheme “κ” transcribes [x]. Spirantisation had not yet affected the noticeable contexts #_ et V_V at that time, so that “χ” still transcribed [k^h]. Since there was no specific grapheme for fricatives, scripts used “κ” in order to express the phonetic difference they perceived between “χ” in [ixt^hyn] (fricative) and [k^h], which continued to be pronounced for classical “χ” in other positions.

Still another (wiser) possible reading is [ikt^hyn], i.e. non-aspirated stop-aspirated stop. This is the take of Allen (1968: 25-26) and Teodorsson (1977: 173), who interpret the boldfaced cluster of 2nd BC spelling “υπελειυθησαν” for classical “υτελειυθησαν” as [pt^h]. Under the analysis that I support above, “πθ” here represents the fricative-obstruent cluster [ft^h]. But even in the case [pt^h] is the correct interpretation, the loss of aspiration is to be viewed as a significant weakening of classical [p^h] in the weakest position: the classical aspirated loses aspiration before becoming a fricative.

In sum, the scenario p^ht^h > (pt^h>) ft^h > ft, far from being challenged by graphic data, can shed light on Egyptian writings of the 2nd century BC - 1st AD.

Also, the analysis proposed offers a diachronic account for the alternation λειπω - λειπθηκε that, as you recall from section 2.1, Holton & al (1997: 19) present as a synchronic derivation /lip-θ-ike/ --> [lif-t-ike]. The modern [lif-t-ike] is not the output of a synchronic rule that affects underlying /lip-θ-ike/, which has been shown to be odd anyway. Rather, [lif-tike] results from the diachronic weakening of classical [lip^ht^hi-].

The previous sections have reviewed the dominant account of the evolution of Greek obstruents, that is context-free spirantisation of the voiced and aspirated series first, followed by various dissimilations of contiguous voiceless segments. This analysis is not really conclusive since it cannot account for passive aorist forms such as [liflike]. On the other hand, a unified and cross-linguistically plausible account of the entire phenomenology can be arrived at if the data are interpreted in the light of Strong & Weak Positions: lenition affects consonants according to two simple and cross-linguistically recurrent parameters: firstly, the syllabic position and secondly, the respective resistance of the various series. This analysis allows to insert Greek into a larger typology.

2.4 The beginning of the word is not strong in Greek

It has been shown in section 2.2 that diachronic lenition of stops produces the same pattern in Greek, Germanic and Romance. Recall, however, that the crucial position for the purpose of this article was explicitly removed from the discussion: the beginning of the word. It will

now be demonstrated that the word-initial context #_V is regularly strong in IE, while it is not in Greek. Table (4) below recalls the facts reported under (3) for convenience, and adds relevant data concerning the word-initial situation.

(4) Contrast between the behavior of Greek #_V vs. Germanic & Romance #_V

Internal contexts				Initial contexts		
	C	V_V	_C	#C	#_V	#_C
a. Romance						
p	TALPA-topə	RIPA-rivə	RUPTA-rutə		PORTA-portə	
t	CANTARE-ʃāte	VITA-viə	PLATNU-plan		TELA-toalə	
k	RANCORE-rākər	LACTUCA-letyə	FACTA-fetə		COR-kər	
b. Germanic						
p	carp-karpfən	pope-pfafə			path-pfaad	
t	salt-salts	hate-hasən			ten-tseen	
k	thank-dan ^k xə	make-maxən			corn-kxorn	
	=	>	>		=	
c. Greek aspirate voiceless stops						
C ^h	oxti =	oθoni >	oxti >	ftano =	θesi . >	ftano >

The Greek data shown are perfectly consistent: the three initial contexts parallel their internal peers.^{viii} Based on the evidence shown, the following conclusions may be drawn.

- Stops in #_C behave exactly in the same way as their internal peers in V_C. Hence, if spirantisation really is a consequence of positional lenition rather than of dissimilation, the syllabification of consonants in the initial context #_C must be identical to the one that is operated in V_C.
- To all extents and purposes, the behavior of word-initial Greek stops before vowels #_V is identical to the one that is observed in intervocalic position V_V. This, however, sharply contrasts with the Germanic and Romance testimony, where stops are guaranteed against lenition in word-initial prevocalic position. It is well known in the Romance and Germanic literature that the two positions #_ and _C produce identical effects. For that reason, they are commonly referred to as the “Strong position” {#C}_, which contrasts with the “weak” (or “frail” according to 2.2 distinction) position V_V. Hence, Greek parts company with the common IE pattern on the issue of the word-initial position, while showing regular behavior elsewhere.

3 Theoretical account

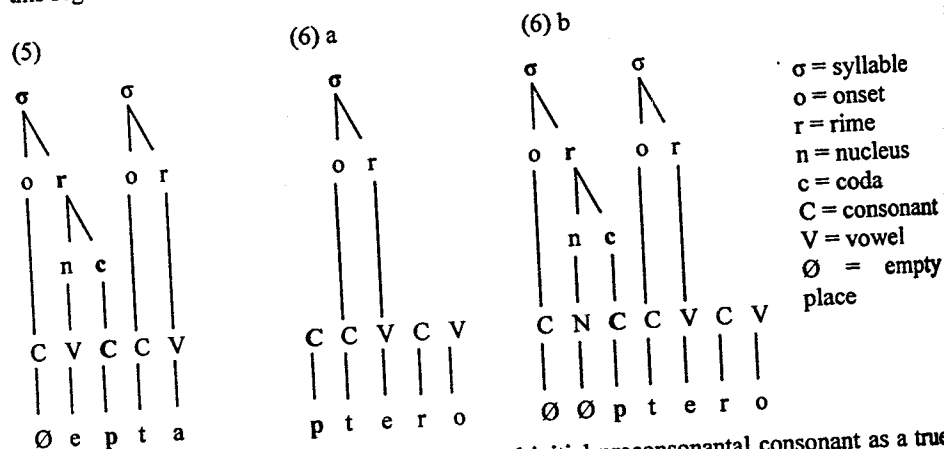
The previous sections have established two peculiar properties of the beginning of the word in Greek. For one thing, consonants are weak in the position #_V, while they enjoy strength in identical context in other languages. Moreover, Greek allows for the existence of obstruents in the contexts #C_ and #_C, from which they are banned elsewhere in IE.

In this section, I inquire on the theoretical identity of the phonological object #_, i.e. the left margin of the word. Relevant proposals have been made within Government Phonology by Lowenstamm (1999), Scheer (2000) and Ségéral & Scheer (2001). I show

that the representation developed in the works quoted allows for a unified account of both extraordinary properties of the Greek initial site that were mentioned: its weakness and the existence of initial "exotic" clusters stem from one single cause.

3.1 Word-initial "Coda" in Greek?

On the foregoing pages, I have used mere descriptive labels such as #_C, #C_ etc. in order to refer to the various positions in the string. They will now have to be identified at the syllabic level. A canonical syllable structure is shown under (5). As has been shown earlier, there can be no doubt that Greek initial obstruent clusters are not homosyllabic. In absence of this option, what could be their syllabic status? The literature offers two concurrent analyses: either the first consonant of an initial obstruent cluster is extrasyllabic, or it belongs to a coda. The former view is illustrated under (6a). It is advocated for example by Stériade (1982) for Greek and Rubach & Booij (1990) for Polish. The latter option is heterosyllabicity. Heterosyllabicity, strictly speaking, implies necessarily two syllables: so what is the syllable that the first segment belongs to? Kaye (1992: 298-299) propounded this segment to be the coda of a syllable whose nucleus is empty (6b).



The identification of the problematic word-initial preconsonantal consonant as a true coda suits the Greek facts exposed since it behaves in the same way as regular internal codas: both weaken in identical fashion. However, Kaye (1992)'s interpretation of word-initial consonants as codas raises a theory-internal problem within Government Phonology: initial consonants as codas has to be "magically" licensed (see Kaye 1992: 305-307 for further details). On the other hand, the existence of empty Nuclei as under (6b) has emerged from the analysis of vowel-zero alternations (Kaye et al. 1990). One case in point is Moroccan Arabic where [ktɪb] 'he has written' alternates with [ktɪbu] 'they have written'. In both forms, [ɪ] alternates with nothing. Moreover, Kaye (1990) has shown that the syllabic structure of Moroccan Arabic is almost entirely CVCV, i.e. a strict consecution of onsets and nuclei. Lowenstamm (1996) has proposed that this syllabic analysis CVCV could actually extend to all languages. The following sections show that this theoretical option is indeed advantageous for the analysis of Greek. Also note that it is not too far

fetched since Greek does also possess vowel-zero alternations, at least in pre-classical times (πέτομαι "to fly" - future πτήσομαι - aorist 2 ἐπτόμην).

3.2 CVCV

CVCV is a recent development within Government Phonology (Kaye et al. 1985, 1990). The central idea of this framework is to interpret syllabic contrasts as lateral government and licensing relations rather than as a specific tree structure. In CVCV, these lateral relations among segments are strictly regressive, and only filled nuclei can dispense government ("G" in the representations below).



Table (7) shows the representations of three Greek words.^{ix} As may be seen, the skeleton is a strict consecution of onsets (consonantal positions) and nuclei (vocalic positions), which may or may not enjoy a segmental instantiation. Onsets may freely be empty, while the presence of an empty nucleus Ø is subjected to a basic principle which is crucial for the present demonstration:

(8) Empty Category Principle (ECP): an empty nucleus has to be governed; only filled nuclei are governors.

It may be read off (7) that the traditional object "Coda" enjoys a different definition in CVCV, which however provides identical information: a consonant "belongs to a Coda" if it occurs before an empty Nucleus.

3.3 Theoretical account of the distributional restrictions: #- = CV

A last theoretical tool needs to be introduced in this section. Based on the analysis of the definite article in Classical Hebrew, Lowenstamm (1999) proposes a truly phonological identity for the beginning of the word, which is usually represented by a diacritic #. The beginning of the word is an empty CV unit in all languages, as illustrated under (9a) below:

(9a) Lowenstamm 1999: universal CV	(9b) Scheer 2000: parametrisation of the CV	
+CV (all languages)	-CV (e.g. Moroccan Ar.)	+CV (e.g. French)
<pre> G / \ C V C V C V C V Ø k Ø t ɪ b Ø </pre>	<pre> G / \ C V C V C V C V k Ø t ɪ b Ø </pre>	<pre> G / \ C V C V Ø t y </pre>

However, this proposal has to face a theoretical problem: in languages that allow for word-initial heterosyllabic clusters such as Moroccan Arabic, the empty nucleus of the initial CV (boldfaced under (9a)) fails to be governed: it remains orphan since the following

nucleus is empty itself. For this reason and in order to translate the typological difference between languages of the regular IE kind and those that follow the Greek / Polish pattern, Scheer (2000) has proposed to parametrise the existence of the initial CV: in the former type of languages, represented by French under (9b), the initial CV is present and thus precludes the existence of word-initial heterosyllabic clusters: the ECP requires that all empty nuclei, including the initial CV, be governed. On the other hand, languages such as Polish or Moroccan Arabic under (9b), which do tolerate word-initial heterosyllabic clusters, lack the initial CV. On this analysis, Greek necessarily belongs to the latter type: there is no initial CV in Greek. The next section shows that the evolution of Greek obstruents is consistent with this typological interpretation.

3.4 Why #_ is a strong position in many IE languages: the Coda Mirror

It was shown in section 2 that the word-initial position #_V is weak (frail) in Greek and patterns with the intervocalic location. This is an exotic situation since in languages of the classical IE type, #_V is strong and produces the same effects as the post-“coda” position C_. The disjunction {#,C}_ defined by both latter contexts is known as the so-called Strong Position in the German and Romance literature (e.g. Bec 1970, Bourciez 1926: 147, Pope 1952: 96, Calabrese 1994).

Scheer & Ségéral (2001) account for the strength of #_ in those languages by the presence of the initial CV. Under their analysis, the disjunction {#,C}_ can be reduced to one single theoretical context, “after an empty Nucleus”. Table (10) shows how the distribution of empty nuclei in CVCV guarantees the correctness of this description (the French word “facturer” [faktyʁe] ‘to invoice’ is used for the sake of illustration):

(10) Theoretical equality of #_ and C_

C	V	-	C	V	C	V	C	V	C	V
Ø	f	a	k	Ø	t	y	ʁ	e		

Both f and t are placed after an empty nucleus.

#_ = Ø_
C_ = Ø_

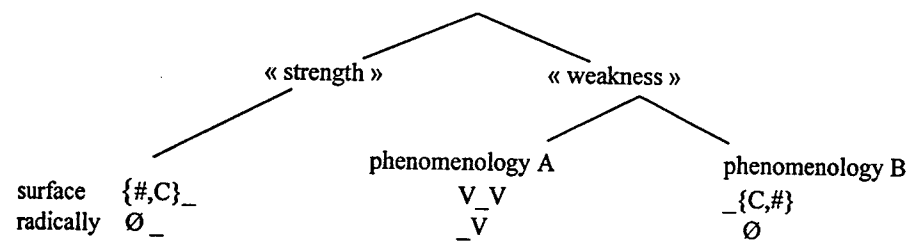
Ségéral & Scheer (2001) call the disjunction {#,C}_ the “Coda Mirror” because it is the exact mirror image of the coda context _{#,C}. Moreover, the coda and its mirror produce opposite segmental effects: weakness in the former, strength in the latter case. (10) shows that both coda mirror consonants, i.e. the initial [f] and the internal [t], share the property of occurring after an empty nucleus (recall that coda consonants occur before an empty nucleus). The strength of consonants that come to stand in the Coda Mirror is the result of the interplay of government and licensing. Space restrictions preclude the discussion of further detail, but it is enough for the present purpose to understand that the lateral relations mentioned are fully determined by the distribution of empty nuclei:

(11) Three consonantal positions in CM theory

- Ø_ (after an empty nucleus): [f] & [t] under (10): Coda Mirror: Strong position.
- _Ø (before an empty nucleus): [k] under (10): Coda: Weak position.
- _ (no adjacent empty nucleus): [ʁ] under (10): V_V: Weak (Frail) position.

Hence, the Coda Mirror predicts the existence of three (and only three) different phenomenologies that correspond to the three situations mentioned under (11). Their organisation may be represented by the following diagram:

(12) Relative health of consonants according to the Coda Mirror



As it stands in Ségéral & Scheer (2001), the theory does not establish any hierarchy between both weak positions, i.e. the coda /_Ø/ (before an empty nucleus) and the intervocalic context /V_V/ (no adjacent empty nucleus). Yet, it anticipates two different phenomenologies (A and B under (12)) because the two weak positions are weak in two different ways. Hence, Greek allows to be more precise: the fact that the intervocalic context V_V (no adjacent empty nucleus) is less weak (i.e. frail) than the coda _C establishes a hierarchy among the two weak positions.

We are now in a position to explain the frail status of the word-initial position #_V in Greek. If lenition affects word-initial #_V and intervocalic V_V consonants in identical fashion, their syllabic status must be identical. We know for sure that intervocalic consonants are flanked by no empty nucleus. Therefore, it must be concluded that word-initial consonants share this situation. In other words, there is no empty nucleus on the left-hand side of Greek word-initial consonants. Put another way, there is no empty initial CV in Greek. Given this result, the contrasting behavior of initial consonants (frail in Greek, strong in Germanic and Romance) may be expressed as follows:

- > #_ Classical IE = /Ø_ / = preceding empty nucleus → presence of the initial CV.
- > #_ Greek = /_ / = no preceding empty nucleus → no initial CV.

In sum, this theoretical analysis of the diachronic frailness of the position #_V converges with the distributional analysis: there is no CV at the beginning of Greek words.

On the foregoing pages, I have developed a unified account for two apparently unrelated properties of the beginning of the word in Greek. That is, the existence of “exotic” clusters and the fact that word-initial consonants are not strong. Both particularities at hand are shown to stem from one single cause: unlike in the more common type of IE languages represented by French or English, Greek words do not begin with an empty CV-prefix. CVCV, a recent outgrowth of Government Phonology, provides a syllabic identity for the first member of word-initial obstruent clusters that is not conflicting with any principle of syllabification: in CVCV, a “Coda” is rigorously defined as a consonant that occurs before an empty Nucleus. Even if languages such as Greek, Polish or Moroccan Arabic that tolerate word-initial obstruent clusters are but a small minority among the languages of the world, their “exotic” initial clusters are brought back to a regular phonological status which is no way exceptional.

In addition to this theoretical advance, there is an associated diachronic benefit. The fact that the Greek word-initial position is not strong calls for analyzing the evolution of Greek obstruents from the perspective of lenition. This way of looking at Greek diachronics is challenging the dominating view, which holds that the facts observed are the result of various dissimilations. I hope to have shown that this analysis embraces a set of unrelated mechanisms: a context-free spirantisation of two series (out of three) and two antagonistic rules of dissimilation of the manner of articulation. These are contrary to the inclination of Greek to assimilate contiguous consonants. Under the analysis recurring to Weak and Strong Positions which is advocated here, all events mentioned may be interpreted as an instance of one single phenomenon that is well documented in many other languages: the greater or lesser weakening of consonants depending on their syllabic position.

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ⁱ #s+C clusters are a constant and well-known exception in all languages quoted. Their existence must be ascribed to the peculiar properties of [s], which shows strange behavior anyway (see for example Kaye 1992). In some languages, another class of contravening words are loans, such as for instance French "pterodactyle".

ⁱⁱ Other arguments in favor of a heterosyllabic analysis are presented in Steriade (1982: 195-209).

ⁱⁱⁱ Obviously, the question could be asked in the opposite way: "What constrains the distributional latitude at the beginning of words in Sanskrit, Romance, Germanic etc.?" The characterization of Greek as an exception relies on purely quantitative grounds: languages that allow for word-initial heterosyllabic clusters are a small minority on the cross-linguistic count. One of the goals of the present article is to show that this statistical situation does by no means imply that the languages concerned possess an "exotic" or an "exceptional" phonology. They are run by the same phonology as all other languages, only are they set apart by a parameter that I set out to identify.

^{iv} Note that the dissimilation of aspiration known as Grassmann's Law (e.g. /t^hrik^h/ - [t^hrik-s] - [trik^hos]) concerns non-adjacent consonants.

^v In all three cases discussed, the presence of a following sonorant is irrelevant: stops show identical behavior whether occurring in branching onsets or in isolation. Therefore, the former situation is not mentioned below. English faithfully represents the Common Germanic situation as far as stops are concerned. The Germanic evolution shown is known as the Second (or High German) Consonant Shift (e.g. Braune & Ebbinghaus 1987: 81ss, Hirt 1931: 96ss, Lerchner 1971). Present common French lost the final schwa: [ʁivə] became [ʁiv], but the forms used for the convenience of the illustration are still attested in meridional French.

^{vi} There is nevertheless a problematic point: in Germanic and Roman, obstruents are in Strong position after a sonorant as well as after an obstruent (Latin-French: CANTAR>[ʃ]āte, RUPTA>ruta: Latin T still stop after both N and P) while in Greek, the post-sonorant position is not: ok^ht^hε > oxti but ort^hos > orθos (no recorded demotic *ortos). This difference between post-sonorant and post-obstruent is often observed in lenition phenomenon. Cf Pöchtrager (2001: 63-67) about Finnish consonant gradation.

^{vii} Although the voiced series does not display any scale of strength, it does obey, by default, to the general pattern: had it displayed, for instance, occlusion maintained in frail position V_V while weakening in strong position C_, it would have contradicted the contextual scale of relative strength.

^{viii} Aspirated voiceless stops have been chosen for illustration since this series truly reproduces the Germanic and Romance pattern, cf. section 2.2.

^{ix} CVCV holds that syllable structure boils down to a strict consecution of non-branching onsets and non-branching nuclei. Hence, all consonant clusters are separated by an empty nucleus. Space restrictions preclude further discussion. See Scheer (1996) for a more detailed presentation, Seigneur-Froli (2001) for an implementation into Greek.