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Author(s): Ellen Kaisse

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GREEK APOCOPE - A RULE THAT PLANS AHEAD*

Ellen Kaisse
Harvard University

0. Introduction

This paper deals with a rule that is very powerful in two different ways. It looks forward to avoid producing outputs that the next rule cannot handle, and it looks ahead to the surface to avoid producing disfavored clusters. The rule is traditionally known as apocope (Ap) in the handbooks of ancient Greek. In its simplest, and, I believe, ultimately correct formulation, apocope deletes a vowel at the end of a preposition or preverb before the initial vowel or consonant of the next word, if the two words are sisters. I will assume this syntactic relationship has its phonological reflex in the presence of a single word boundary.

$$\frac{\text{Apocope}}{\text{(optional)}} \quad V \rightarrow \emptyset / \frac{\quad}{\text{[preverb]}} \# \text{ [seg]} \\ \text{[preposition]}$$

Thus we find:

kata#tít^he:mi alternating with kat(#)tít^he:mi
'down-put'

kata#tous nómous alternating with kat tous nómous
'according to the laws'

There is some reason to believe that some weak, word-like boundary exists even between preverbs and their verbs (although they are graphically one unit), since the preverb can be scrambled away ("tmesis").

The vowel-dropping phenomenon is uninteresting when it occurs before another vowel, but the facts get more intriguing when we consider what sort of consonants the Ap rule allows to end up adjacent, and what happens to these clusters before they reach the surface.

In ancient Greek, the two consonants which Ap brings together must become a geminate, through the operation of a regressive assimilation rule (RA), even if the unassimilated cluster is permissible word-internally. The RA rule, in its most general form, looks like this for obstruents:

$$\frac{\text{Regressive Assimilation}}{\text{(obligatory)}} \quad C_1 \rightarrow C_2 / _ \# C_2$$

For instance, if we apply apocope to the word apokope: 'cut off' (literally 'off-cut') we will get *apkope: which then obligatorily becomes akkope: by RA.

We get different outputs from consonant clusters at weaker boundaries² so we know the rule must make reference to #. It is hard to find examples in attested Greek where RA applies without

the previous application of Ap to feed it, because Common Greek had a rule deleting all word-final obstruents except s. It is rare then to find two obstruents adjacent across a single word boundary in underlying form. However, as we will see in section 2.1, it can be fairly conclusively proven that Common Greek did have a rule of RA. Furthermore, RA also applies to sequences of n or r followed by #C, and these cases do arise in synchronically underlying forms of attested Greek.

1. Restrictions on the application of apocope

The apocope rule might be presumed to apply generally, since all it does is remove a semantically unloaded, unstressed vowel. But in fact it doesn't. There is a whole complicated set of restrictions on the phonological domain of its application in the five dialect groups of ancient Greek. These restrictions can be divided into two conditions which may apply more or less stringently, according to the dialect:

- (C1) The first consonant (the one before the doomed vowel) must be a dental.
- (C2) The consonants which will end up adjacent must be homorganic.

Peculiar conditions on a vowel-dropping rule, but more on that later. If a dialect requires that both conditions be met, relatively little apocope will take place, and, consequently, fewer geminates will be produced. If only one condition must be met, there will be correspondingly more apocope and gemination; if fulfilling either condition will do, there will be still more. The dialects can be quite neatly divided in the way they impose these conditions. In Attic-Ionic, apocope never gets to apply (except in the uninteresting prevocalic environment.) In most of Western and Southwestern (Doric) Greek, (C1) must obligatorily be met, and (C2) acts as a part of a variable rule, so that if it is fulfilled the rule applies more frequently. So only prepositions of the form ...TV- lose their final vowels, and they lose them most often before a word starting with another dental. However, a few Western dialects and Arcadian drop (C2) entirely, and will apocope any vowel preceded by a dental, no matter what the following consonant may be. Proceeding along a hierarchy of increasing application of apocope and geminate-production, we come to most of the Aeolic dialects. These stipulate that either (C1) or (C2) must be met; that is, any vowel after a dental will drop (regardless of what consonant follows) and a vowel after a labial will also drop if the following consonant is labial. (There are no prepositions of the form ...KV-.) Finally we come to the Aeolic dialect Thessalian, which ignores both conditions and will apocope anything anywhere. Perhaps a chart of these restriction will make them more manageable:

<u>type</u>	<u>example</u>	<u>apocopes in</u>
dental V#dental	kata tas	Western, Arcadian, all Aeol.
dental V#C	kata ballo	some West., Arcad., all Aeol.

<u>type</u>	<u>example</u>	<u>apocopates in</u>
labial V#lab	apo ballo	all Aeolic
labial V#C	apo tas	Thessalian only

As we said, Attic-Ionic, the dialect one learns in Greek classes, has no apocope of the preconsonantal type at all. The very early Greek attested in the Mycenaean inscriptions in Linear B, although related to Arcadian, does not appear to have Ap either, although such things are hard to be certain about in that script.³

The important things to abstract from the above mass of data are:

- (1) The vast majority of dialects only allow apocope if the first consonant in the cluster that will be produced is a dental.
- (2) There is a hierarchy of frequency and generality of apocope's application, with Attic-Ionic at the bottom and Thessalian at the top.

The significance of (1) will soon become apparent. We will deal with (2) in section 3.

2.0 The regressive assimilation rule

Ap produces new clusters at single word boundary, and these must undergo RA. Several questions about RA present themselves. Is it demonstrably a separate rule form Ap? Do all the dialects, including those without Ap, have it? Can it assimilate any consonant to any other consonant, or is it less powerful than that? What did it look like in Common Greek? Since, as we mentioned above, Greek lost final obstruents quite early, it is necessary to go back into prehistory to tell what RA was like when it had input other than what Ap gives it.

2.1 The Common Greek regressive assimilation rule

There are several forms occurring in attested Greek that can only be explained as the result of the assimilation of a Common Greek t or d to a following consonant. Thus:

hoppoios		hod-poios	'the which'
hoppos		hod-pos	'the how'
hotti		hod-ti	'the what'
hokka	from	hod-ka	'the when'
pokki		pot-kj	'for what'
...po-pi {[popp ^h i]}		...pod-p ^h i	'foot-locative' (Myc.)

These are all collocations where one expects single word boundary. Hod seems to have acted as an enclitic, pot is in fact probably the apocopated form of a preposition, and -p^hi is an archaic case ending which, preserved in Sanskrit, behaves as if separated from nouns by single word boundary. Notice that in all these rules, RA is dealing only with dentals as focus. No other consonant is assimilating. This is, in a sense, an accidental gap, in that Greek never had many consonant-final clitics it could juxtapose. But I do think that the list is representative of all the types of C#C clus-

ters that actually arose in Common Greek. I do not believe that anything other than a dental was likely to have formed the first member of a C#C cluster. We must now ask if this meant that the Common Greek regressive assimilation rule could only handle dentals. This seems the reasonable conclusion to draw, though it raises the question of whether a speaker, confronted with data that a weak but general rule can handle, will posit the weak rule or the most general possible formulation of that rule, lacking any evidence of its total generality. Did Common Greek have a rule assimilating dentals to a following consonant over word boundary, or one assimilating all obstruents? I opt for the former, given the generality of the rule in the limited formulation (not just voiceless dentals, for example) and the absence of any evidence of greater strength. This conclusion draws support from the fact that word-internal obstruent clusters in Greek may not begin with a dental, only with a labial or a velar. It would therefore make sense for the language to adopt a rule which could eliminate dentals from C#C clusters but which would make no mention of other obstruents, since these were acceptable as the first members of other clusters.

2.2 Regressive assimilation in Attic-Ionic

Another piece of evidence for the existence of a rule of RA in Common Greek, separate from apocope, is that such a rule continues to exist in Attic-Ionic, although that dialect group has no apocope. Not only does Attic-Ionic have the reflexes of the C#C clusters listed on the previous page (with the geminates simplified), it also has some word-final consonants that the obstruent-deletion rule did not affect: s, r, and n. We can therefore find prepositions in Attic-Ionic like syn 'with' which undergo the same process before consonants as apocopated prepositions like an from ana 'up' in the other dialects. The reflexes of an assimilated sonorant are not quite as simple of those of an assimilated stop. Before liquids we get complete assimilation: $\text{syn\#lego} \rightarrow \text{sylllego}$ just as $(\text{ana\#lego} \rightarrow) \text{an\#lego} \rightarrow \text{allego}$. Before obstruents, only place assimilation takes place: $\text{syn\#pat}^{\text{h}}\text{o} \rightarrow \text{sympat}^{\text{h}}\text{o}$ just as $\text{an\#pauo} \rightarrow \text{ampauo}$. Clearly, this must be the same rule in Attic-Ionic as the one we have termed RA elsewhere.

Attic-Ionic therefore provides evidence that RA is a separate rule from Ap. It also provides no counter-evidence to the claim that RA refers to dentals only as the focus. Notably, the Attic-Ionic preposition ek(s), which, preconsonantly, appears with final k, does not assimilate. We find ekpat^ho, etc.⁴

2.3 The global relationship between apocope and assimilation

If we now go ahead and assume that the RA rule the dialects inherit referred only to dentals, a striking similarity between the most usual restriction on apocope and the possible inputs to RA presents itself. Ap removes only those vowels which stand between consonants the inherited RA rule could handle, should they become adjacent! We might still choose to list the restrictions in the environment of the apocope rule itself:

types); more to the point, Zwicky (1972) has noted that fast speech rules may either have their unacceptable outputs fixed up before they reach the surface or apply less generally. In Greek, apocope makes both sorts of compromise with the surface. What can get fixed gets fixed, what is irreparable is not produced. In section 3 we will see another sort of compromise apocope makes with the surface configurations of the various dialects. If one should balk at the weakest spot in this argument about the relationship between apocope and regressive assimilation - namely the proof that regressive assimilation is actually too weak to handle clusters that do not begin with a dental - one is still left with a rule that is in principle concerned with the input to the next rule. For apocope will have to specify in its environment exactly those segments (the consonants) that have everything to do with the operation of assimilation and nothing to do with the phonetic likelihood of dropping a vowel.

2.3 The dialects with apocope occurring in environment after other than a dental are easily explained if we think of them in terms of generalized regressive assimilation rules. Those which allow Ap to bring any consonants together so long as they are homorganic have generalized the original RA rule to one of manner assimilation for all clusters. This is easily done, since manner assimilation was already needed in the original rule for sonorants. (Section 2.2) Thessalian has generalized the rule to effect both place and manner assimilation for all consonants. Apocope, which is by nature completely general, then allows more types of clusters to get through as the RA rules become equipped to handle them. If we assume that the original RA (and Ap) rule(s) were general, then it is hard to understand why the dialects would have put such unlikely restrictions on them. Thessalian almost surely represents the dialect that has undergone the most change.

3.0 A slippery conspiracy

There is another, perhaps even more mysterious and hard to pin down, way in which apocope manifests its concern for the future. Not only does it seem to care what the next rule will do, it also seems to participate in a compromise with each of the dialects' tolerance for the presence of geminates on the surface. To make the claim more specific: there is a hierarchy of increasing tolerance for and production of geminates which matches up to an astonishing extent with the other hierarchy of increasing application of apocope. Recall the chart of increasing application of apocope in section 1. Attic-Ionic was lowest down, with no Ap at all. Then came Western Greek, then a few anomalous Western dialects (Cretan, Laconian, and Elean), then most of Aeolic, and, finally, Thessalian, with unrestricted apocope. The result of applying apocope is, ultimately, the production of geminates. Now let us compare this hierarchy with the presence or absence of geminates from other sources in the dialect groups we have defined. Attic-Ionic, first of all, avoids geminates the most of all the dialects. This is not to say it has none. But where all other dialects have inherited geminates or have reflexes of various

clusters that emerge as geminates, Attic will often have eliminated the geminate. One example is the old *hod- compounds discussed in section 2.1. These have geminates everywhere but in Attic-Ionic. Another is reflexes of *ss and *ty clusters, which emerge as ss in most Greek, but as s in Attic-Ionic. Furthermore, Attic-Ionic has no rules which produce geminates.

The next group, Western Greek, is like Attic-Ionic in having no geminate-forming rules. But it does allow those geminates produced by very old rules like hod- compounding to remain, and it does also allow all the inherited geminates to continue unmolested. This is the group which allows a very limited number of geminates to be produced by a restricted apocope rule.

Elean, Cretan, and Laconian, next on the apocope hierarchy, have introduced some new rules that actually produce some new geminates. What is elsewhere written zd is written dd in these dialects, though this may simply be a graphic difference. More convincingly, pt, kt, and st emerge as tt in this group.

The alert reader will notice that Arcadian was lumped in with these few Western dialects in the apocope hierarchy. Arcadian does not, however, produce geminates like they do, and would at first blush appear to be an exception to the proportion I am building up. However, Arcadian simplifies the geminates it produces with its fairly free apocope, and therefore causes less conflict with its surface dislike of geminates than it otherwise would.

The Aeolic dialects have as reflexes of the very frequently inherited sequences *s+sonorant, sonorant+*s, glide+sonorant, geminate sonorants. That is, compensatory lengthening for the loss of *s or *glide is realized on the consonant next to the lost segment in Aeolic. In all other Greek, it is realized on the preceding vowel. So we find emmi from *esmi (Attic e:mi) and estella from *estelsa (Western este:la). This gives Aeolic a very characteristic geminate-y surface structure, much more so than even Cretan, Elean and Laconian.

But the most striking case by far is to be made in Thessalian, the dialect with unrestricted apocope. Thessalian, being an Aeolic dialect, has all the geminates produced by s- and glide-loss just described. And it has the reflexes we noted for the few Western dialects: tt for pt, and dd for zd. Not only that, it has its own peculiar geminate-producing process. It doubles consonants occurring before i or y, even doubling voiced stops, the geminates of which are very rare in the rest of Greek. We find iddian for idian, pollios for polios, ekklessia, proxenniou, etc. I am sure this is more than a graphic phenomenon, for, I am told, the same process occurs in West Germanic.

There we have it. The frequency of apocope and its concomitant production of geminates lines up directly with the frequency of geminates allowed through on the surface from other sources. Apocope seems to be compromising again. This time it agrees to limit its application in accordance with the surface configuration preferred by the dialect in question. Attic-Ionic hates geminates to such an extent that

Ap gives in completely and applies only before vowels. Thessalian appears to have no objection to geminates at all, so apocope applies without restriction. The other dialects tolerate geminates to a greater or lesser degree; Ap kindly produces more geminates to a similar degree. How this compromise might get instantiated in a grammar is a mystery to me, but the case seems quite strong that it has, particularly for the dialects at the extreme ends of the hierarchy.

4. Conclusion

It has been noted before, notably by Zwicky, that rules of casual speech tend to apply less generally if their output is disfavored on the surface. In this paper I have made this observation more concrete and more formal. The Greek rule of apocope looks ahead to avoid producing irremediable clusters, and it looks to the surface to avoid producing outputs not in accord with the general surface configuration of the dialect.

FOOTNOTES

*I would like to thank Joachim Schindler for his valuable help on this paper. The usual disclaimer of course holds.

1. The handbooks generally treat the prevocalic case under the separate rubric of 'elision,' but I see no reason offhand to treat the two cases separately. If elision is a separate rule, it makes little difference to my argument, in any case.

2. For example, word-internal *nr comes out as ndr, but remains nr when the consonants are separated by a morpheme boundary. /p+t/ remains as such (as in the 3p sg pf of labial-final verb stems), but must assimilate to tt when # is the boundary between p and t.

3. See Chadwick and Baumbach (1963) for a fuller discussion. There are no certain cases of apocope in Myc., but a few have been proposed. It is not altogether clear that the writing system would have reflected apocope in the spoken language, even if there had been any, so we can draw no conclusions about dating of the inception of Ap.

4. There are other equally plausible explanations for the failure of ek(s) to undergo RA. The s may be present in the underlying form at the time assimilation would apply (not too likely); or RA may fail to apply to avoid homonymy with the past tense prefix e-, the preposition en-, etc. I said 'equally' but I don't believe it.

5. See Dressler on Breton (1972) and Latin (1973), Zwicky on Welsh (1972.) Other properties of Greek apocope held in common with accepted allegro rules are (possibly) inhibition when homonymy will result (such as ana 'uþ' being confused with a(n) 'not!') and phonetic output constraints irrelevant to the rule itself (as in Breton vowel-dropping.)

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