# From fusion to agglutination:
The curious case of Asia Minor Greek

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1. Background: Asia Minor Greek

--> Asia Minor Greek (AMG; Dawkins 1910, 1916): The Greek varieties spoken by the indigenous Greek population of Asia Minor until the population exchange that took place after the Greek-Turkish war in the 1920s.

--> It includes various dialectal groups and stray varieties. The most salient are Pontic, Cappadocian, Pharasa, Silli, Livisi, Bithynian, etc.

--> This study focuses on the varieties spoken in and around the Cappadocian plateau (i.e. Cappadocian, Pharasa, Silli).
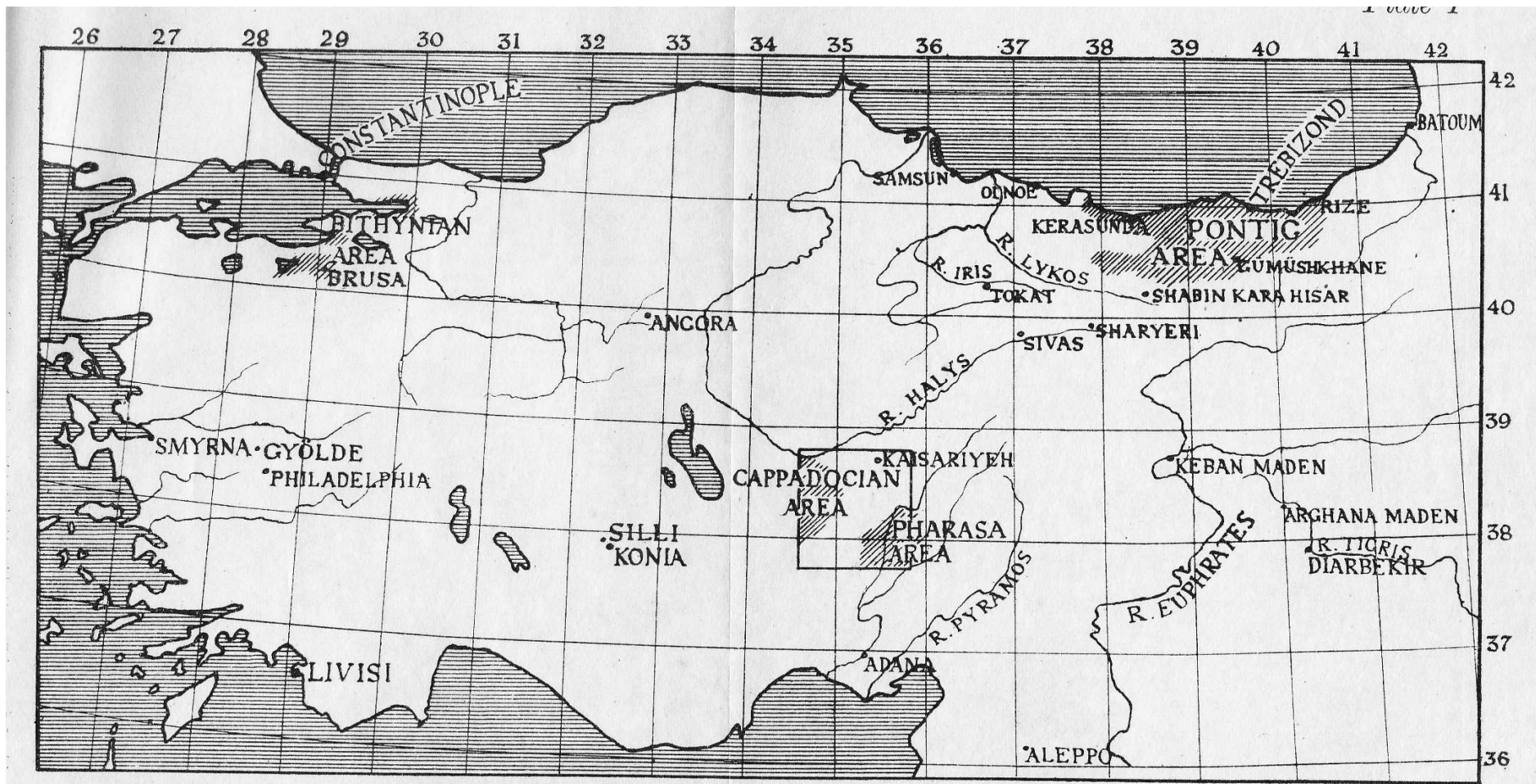
Map of Asia Minor to shew the regions where Greek is spoken. The square patch is the area covered by the map on Pl. II.

Map from Dawkins (1916) with the distribution of AMG varieties

Asia Minor Greek varieties have been affected by the long-term language contact with Turkish in a way that they exhibit interference at all grammatical levels (Dawkins 1910, 1916, Janse 2002, 2009; see also Thomason & Kaufman 1988, Johanson 2002).

We will focus on two potential contact-induced phenomena:

1| The existence of both a **fusional** (Greek pattern) and an **agglutinative** (Turkish pattern) nominal inflection. These patterns may even co-exist in the same variety. The agglutinative pattern is more salient in the most turkicized varieties, such as the varieties of Ulaghatsh and Ferték of the Cappadocian group (CGr):

(1) Fusional declension

		Delmesos			Potamia	Axos
SG	NOM	pondʒikos	papas	neka	askeris	lero
	GEN	pondʒiku	papaðju	nekas	askerju	leru
	ACC	pondʒiko	papa	neka	askeri	lero
PL	NOM	pondʒiki	papaðes	nekes	askeri	lera
	GEN					
	ACC	pondʒikus	papaðes	nekes	askerjus	lera
		'mouse'	'priest'	'woman'	'soldier'	'water'

(2) Agglutinative declension

		Axos		Fertek	Ulaghatsh	
SG	NOM	fovos	neɣeli	ɣeros	neka	milo
	GEN	fovozju	neɣelju	ɣerozju	nekaju	miloju
	ACC	fovos	neɣeli	ɣeros	neka	milo
PL	NOM	fovozja	neɣeles	ɣerozja	nekes	miloja
	GEN		neɣelezju		nekezju	
	ACC	fovozja	neɣeles	ɣerozja	nekes	miloja

'fear'   'herd'   'old man'   'woman'   'mill'

2| The development of a vowel process in certain AMG varieties, which looks like the vowel harmony that is familiar from Turkish (see also Revithiadou, Van Oostendorp, Nikolou & Tiliopoulou 2006; Van Oostendorp & Revithiadou 2005; Van Oostendorp 2005):

(3) a. ðáskal-os   ðásk**olo**s   'teacher' Phar, An48:20

 b. ánem-os   án**o**m**o**s   'wind' Axo, MK9

 c. ípn-os   ɟ**ú**pn**u**s   'sleep' Sil, Ko35

Properties of the VH-like process

--> Sensitive only to the morphological category of nouns

--> Disyllabic domain; end of the word, between the ending and the stem

--> Closely associated with the fusional pattern

AIMS:

--→ To describe the phonological process and account for its exact nature.

--→ To associate it with the developments that led to the reorganization of the nominal morphology in AMG varieties and, more specifically, with the *reanalysis of the morphological status of theme vowels and old endings*.

2. The development of vowel harmony (or something like harmony)

Certain AMG varieties (e.g., Silly, Axos, Delmesos, Pharasa, Livisi) developed a vowel process which superficially looks like the Turkish vowel harmony (Revithiadou et al. 2006) which, nevertheless, is dramatically different from it (Van Oostendorp 2005):

(4) a. /petsét-a/   pets**áta**   'napkin' Sil, K185

     b. /ðáskal-os/   ðásk**olo**s   'teacher' Phar, An48:20

     c. /ánem-os/   án**omo**s   'wind' Axo, MK9

     d. /kóskin-o/   kósk**uno**   'sieve' Sil, Ko31

Zooming in the **AMG harmony-like** process:

- The final vowel requires the preceding one to agree with it in backness and roundness.

<div style="text-align:center">

e-**a**   e-**o**s   a-**o**   i-**o**

</div>

(5) a. /petsét-a/   petʃ**á**ta   'napkin' Sil, K185
b. /ðáskalos/   ðásk**o**l**o**s   'teacher' Phar, An48:20
c. /ánemos/   án**o**m**o**s   'wind' Axo, MK9
d. /kóskino/   kósk**unu** (o → u)   'sieve' Sil, Ko31
e. /áçiro/   ás**uru**   'straw' Liv, OACAMS IE'
f. /ípnos/   ɟ**ú**pn**u**s   'sleep' Sil, Ko35

- The process affects mainly words stressed on the APU or PU syllable, although a stressed final vowel can be a trigger in disyllabic words. (Stress final words usually conform to the agglutinative paradigm.)

(6)   a. xrist-ós   xr**ust**ós   'Jesus' Liv, OACAMS IE'

               θim-ós   **su**m**ó**s   'anger' Sil, Ko35

- The process may affect epenthetic vowels, which are inserted to split consonant clusters.

(7)   /kastro/   kas.t**u**.r**u**   'castle' Sil, Ko35

AMG 'harmony' characteristics in a nutshell:

a. Sensitive to morphological category, i.e. nouns, and case, i.e. nom.sg

b. Disyllabic domain; end of the word, between an ending and a stem

c. Attested mainly in σόσ and όσσ words

d. Affecting epenthetic vowels in stem

e. Associated only with the **fusional paradigm**

Cf. vowel harmony in Turkish

(8)   SG-NOM   SG-GEN   PL-NOM   PL-GEN
  a. /iʃ/   /iʃin/   /iʃler/   /iʃlerin/   'name'
  b. /ev/   /evin/   /evler/   /evlerin/   'house'
  c. /kɯz/   /kɯzɯn/   /kɯzlar/ /kɯzlarɯn/ 'girl'
  d. /jol/   /jolun/   /jollar/ /jollarɯn/ 'road'
  e. /gyl/   /gylyn/   /gyller/ /gyllerin/ 'rose'
  f. /gœl/   /gœlyn/   /gœller/ /gœllerin/ 'lake'
  g. /tas/   /tasɯn/   /taslar/ /taslarɯn/ 'pot'

Question 1| Why is the AMG VH-like process confined to the last two syllables of the word?

Question 2| Why is it sensitive to morphology?

Conclusion:

--> AMG harmony is not harmony!

▷ **Van Oostendorp (2005)**: AMG harmony does not have any of the characteristics of vowel harmony and, furthermore, cannot be efficiently treated as such under current theories of vowel harmony.
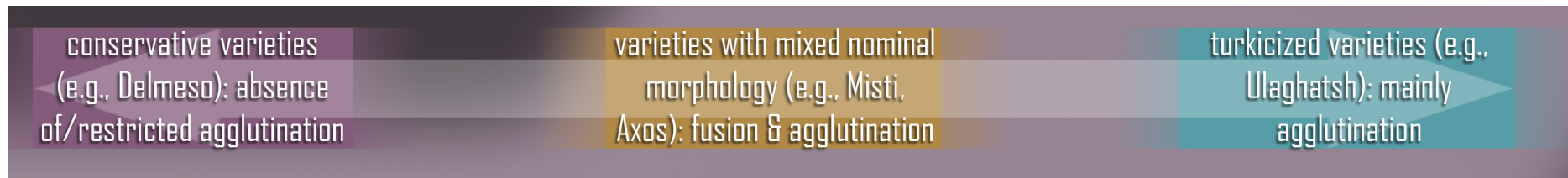
HYPOTHESIS: The AMG harmony is not a 'borrowed' rule from Turkish but rather a novel phonological process of F-spreading that emerged when certain morphological pressures were exercised in the system.

Question 3| Which morphological developments led to the F-spreading process and why is it restricted to dialects with predominantly *fusional inflectional patterns*?

3. From fusion to agglutination

In AMG varieties internal developments as well as language contact with Turkish caused a radical reorganization of the nominal morphology (Dawkins 1916, Janse 2004, Spyropoulos & Kakarikos 2009, Karatsareas 2011, Revithiadou & Spyropoulos 2012, a.o.).

In Cappadocian Greek varieties this led to the emergence of agglutinative inflectional patterns. CGr varieties constitute a continuum as far as this development is concerned:

| conservative varieties (e.g., Delmeso): absence of/restricted agglutination | varieties with mixed nominal morphology (e.g., Misti, Axos): fusion & agglutination | turkicized varieties (e.g., Ulaghatsh): mainly agglutination |

- More conservative varieties exhibit no or less agglutination (e.g., Delmesos) --> [F-spreading is attested]

- Most of the varieties stand in the middle with fusional, agglutinative and mostly mixed patterns (e.g. Misti, Axos, etc.) --> [F-spreading is widely attested]
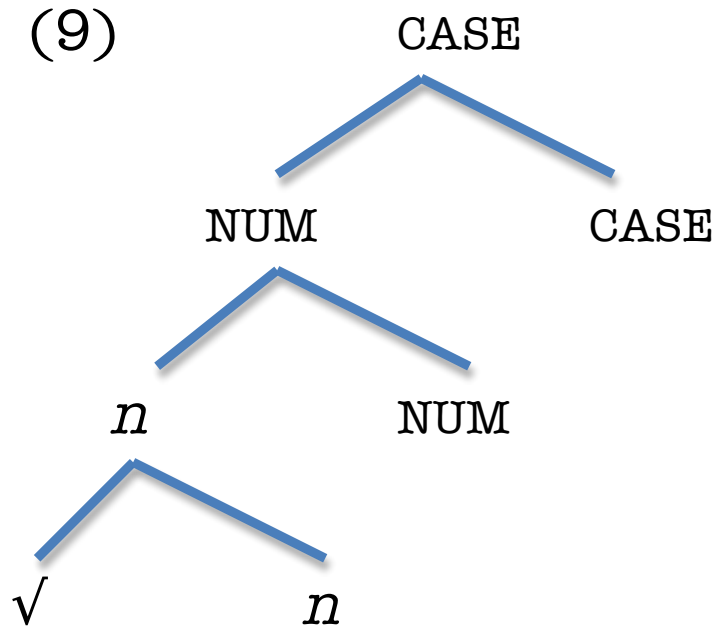
- More turkicized varieties exhibit more agglutination (e.g., Ulaghatsh)

Some notes on the fusional character of Greek declension and the status of theme elements
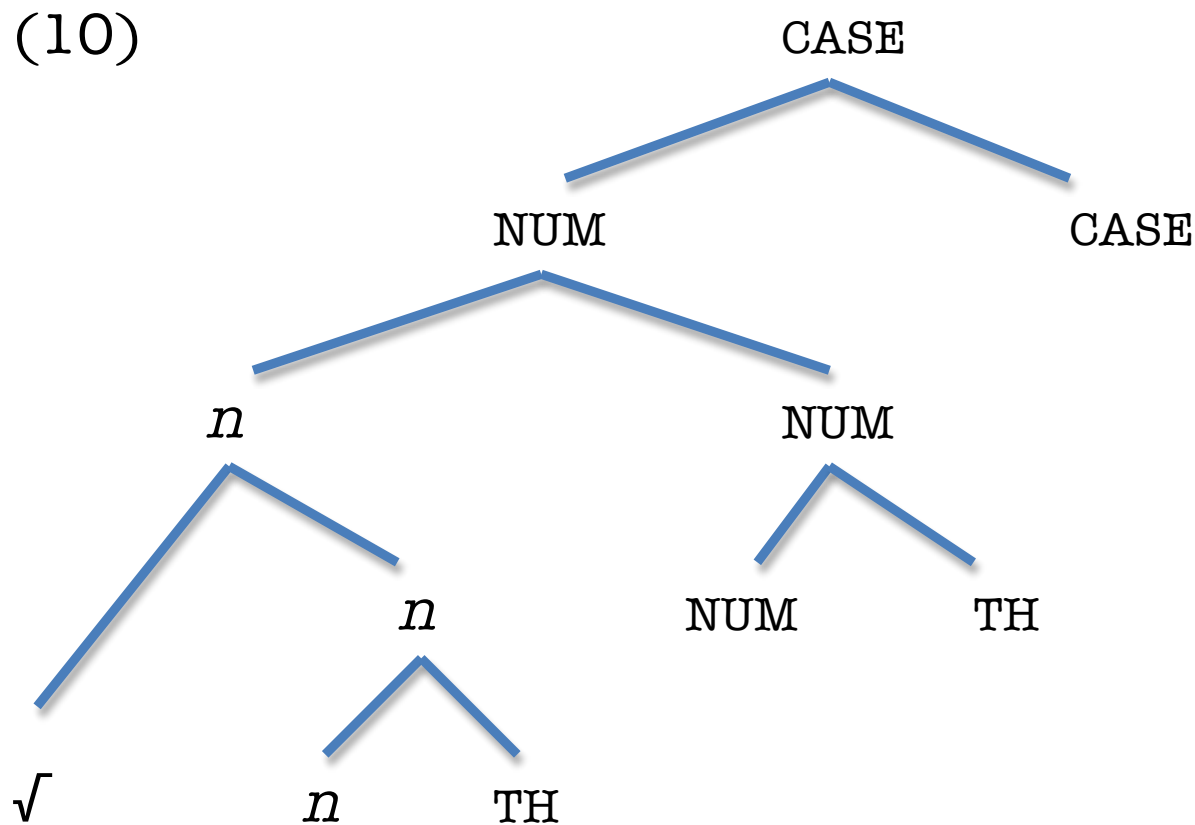
In Greek nominal forms three elements may be identified:[1]

- a root (√)
- a theme element (TH), which is mainly a theme vowel (THV), or a VC syllable
- a fused exponent for number (NUM) and case (CASE)

Greek nominal forms have the following structure:[2]

(9)

```
                        CASE
                       /    \
                   NUM       CASE
                  /    \
                 n      NUM
                / \
               √   n
```

Theme elements may attach either to *n* or to NUM

[On the locus and status of theme elements see Oltra-Massuet (1999), Oltra-Massuet & Arregi (2005) and the discussion in Embick (2010)]

(10)

```
                          CASE
                        /      \
                     NUM        CASE
                    /    \
                   n      NUM
                  / \    /    \
                 √   n  NUM    TH
                    / \
                   n   TH
```

(11) Greek parisyllabic declension (Holton et al. 2012)

|		TH: o		TH: i		TH: a	
		MASC	**NEUT**	**MASC**	**FEM**	**MASC**	**FEM**
SG	NOM	mil-o-s	ner-o-∅	kleft-i-s	kor-i-∅	andr-a-s	ɣinek-a-∅
	GEN	mil-u	ner-u	kleft-i-∅	kor-i-s	andr-a-∅	ɣinek-a-s
	ACC	mil-o-∅	ner-o-∅	kleft-i-∅	kor-i-∅	andr-a-∅	ɣinek-a-∅
PL	NOM	mil-i	ner-a	kleft-es	kor-es	andr-es	ɣinek-es
	GEN	mil-on	ner-on	kleft-on	kor-on	andr-on	ɣinek-on
	ACC	mil-us	ner-a	kleft-es	kor-es	andr-es	ɣinek-es
		'mill'	'water'	'daughter'	'thief'	'man'	'woman'

--> In these nouns THV is conditioned by number in the sense that it appears only in singular forms → THV is adjoined to NUM

--> NUM and CASE are fused and manifested by a single exponent

--> This exponent combines with the THV (which is part of NUM) into a single constituent (call it the **ending**)

(12)
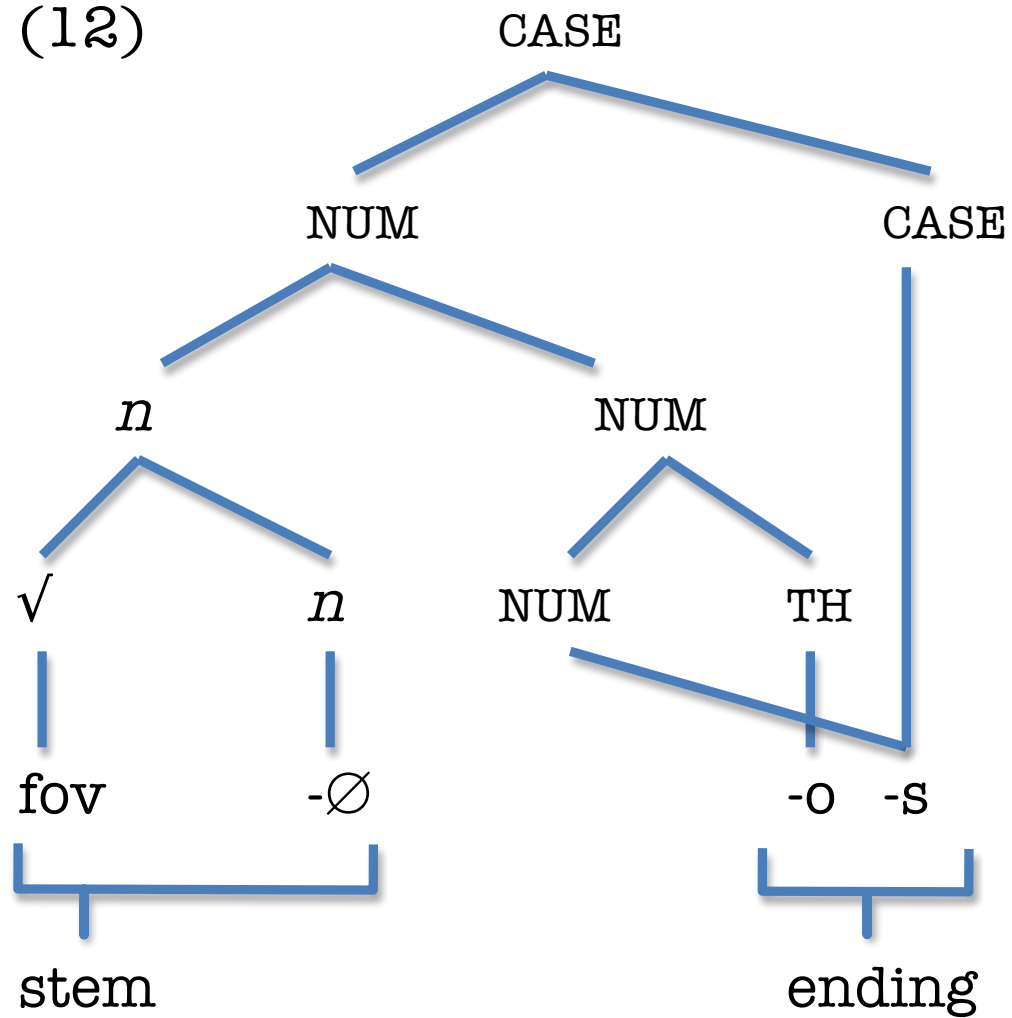
> fovos 'fear-SG.NOM'

Back to the development of agglutinative patterns

The following tables illustrate the most representative patterns of agglutination. The corresponding fusional pattern is illustrated by the Delmesos variety.

[The examples are from Dawkins (1916), Andriotis (1948), Kesisoglou (1951), Mavroxalyvidis & Kesisoglou (1960)]

(13)

		Delmesos	Axos	Misti	Ulaghatsh		Semendere
SG	NOM	milos	fovos	kapnos	ɣamos	milo	pindikos
	GEN	milu	fovozju	kapnoju	ɣamozju	miloju	pindikozju
	ACC	milo	fovo(s)	kapno(s)	ɣamos	milo	pindikos
PL	NOM	milus	fovozja	kapnoja	ɣamozja	miloja	pindiki
	GEN	--	--	--	--	--	--
	ACC	milus	fovozja	kapnoja	ɣamozja	miloja	pindiki
		'mill'	'fear'	'smoke'	'wedding'	'mill'	'mouse'

(14)

		Delmesos	Ulaghatsh		Fertek
SG	NOM	ðendro	lero	orɣo	lutro
	GEN	ðendru	leroju	orɣoju	lutroju
	ACC	ðendro	lero	orɣo	lutro
PL	NOM	ðendra	lera	orɣata	lutroja
	GEN	--	--	--	--
	ACC	ðendra	lera	orɣata	lutroja
		'tree'	'water'	'work'	'bath'

(15)

		Delmesos	Ulaghatsh	
SG	NOM	neka	neka	lira
	GEN	nekas	nekaju	liraju
	ACC	neka	neka	lira
PL	NOM	nekes	nekes	liraja
	GEN	--	nekezju	(lirajaju)
	ACC	nekes	nekes	liraja
		'woman'	'woman'	'pound'

(16)

		Delmesos	**Axos**	**Ulaghatsh**
SG	NOM	kleftis	numatis	despot
	GEN	kleftu	numatu	despotju
	ACC	klefti	numati	despot
PL	NOM	klefti	numates	despotja
	GEN	--	numatesju	--
	ACC	kleftjus	numatjus	despotja
		'thief'	'person'	'bishop'

There are two types of agglutination:

1| In the <u>conservative type</u>, the nominative singular form has been reanalyzed as the stem to which inflectional affixes are attached. In these instances, the old ending has been reanalyzed as constituting a part of the stem.

(17) [stem fov][ending [TH -o][number.case -s]]

→ [stem fovos] [number.case -∅]

a. [stem fovos][SG.NOM/ACC -∅] > fovos 'fear-SG.NOM/ACC'

b. [stem fovos][GEN -ju] > fovozju 'fear-GEN'

c. [stem fovos][PL.NOM/ACC -ja] > fovozja 'fear-PL.NOM/ACC'

2⎮ In the radical type, the nominative singular form has been reanalyzed as involving a stem and a singular suffix. In these instances, the TH element has been reanalyzed as a singular number exponent, which is replaced in the plural by the default plural exponent, resulting in agglutination proper.

(18)   [stem nek][ending [TH -a][number/case -∅]]   →

[stem nek][SG -a][case -∅]

a.   [stem nek][SG -a][GEN -ju]   >   nekaju 'woman-SG-GEN'

b.   [stem nek][PL -es][NOM/ACC -∅]   >   nekes 'woman-PL-NOM'

c.   [stem nek][PL -es][GEN -ju]   >   nekezju 'woman-PL-GEN'

--> We will focus on the conservative type.

4. Proposal

The transition from fusion to agglutination reveals a **reanalysis** in the morphological structure of nouns:

--> The theme vowel (or the whole ending) becomes a part of the stem.

--> Technically speaking, the theme vowel ceases to attach to NUMBER and attaches to n. Alternatively, the whole old ending may become a theme element and attach to n.
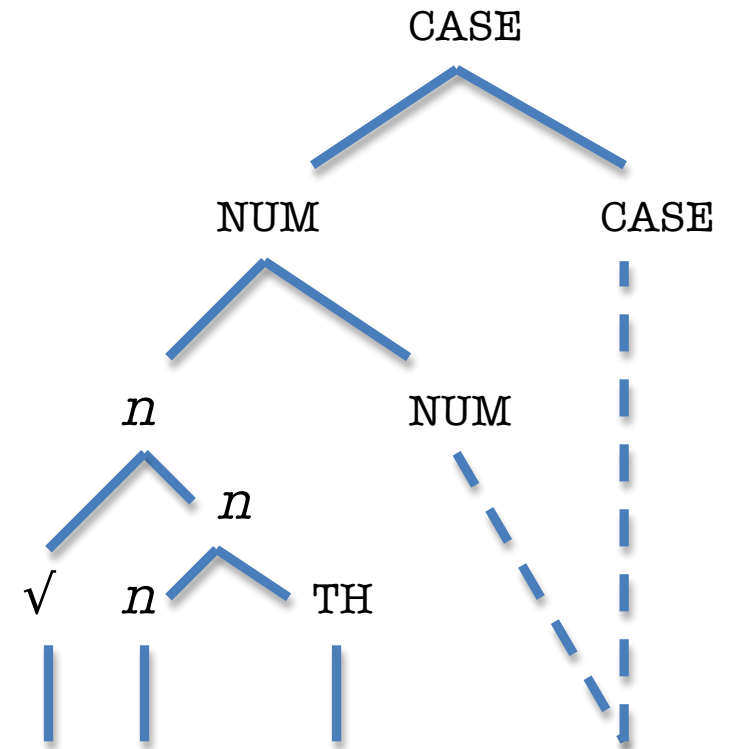
(19)   stem + [$_{\text{ending}}$ THV – number.case exponent] →

        [$_{\text{stem}}$ root - THV] + [number, case exponent(s)]

(20)   [$_{\text{stem}}$ mil] + [$_{\text{ending}}$ [$_{\text{THV}}$ -o][$_{\text{number.case}}$ -s]] →

        [$_{\text{stem}}$ [$_{\text{root}}$ mil][$_{\text{THV}}$ -o]] + [$_{\text{number, case}}$ -s, -ju, -ja]

(21)

CASE — NUM — CASE
NUM — *n* — NUM
n — √ — *n*
NUM — TH
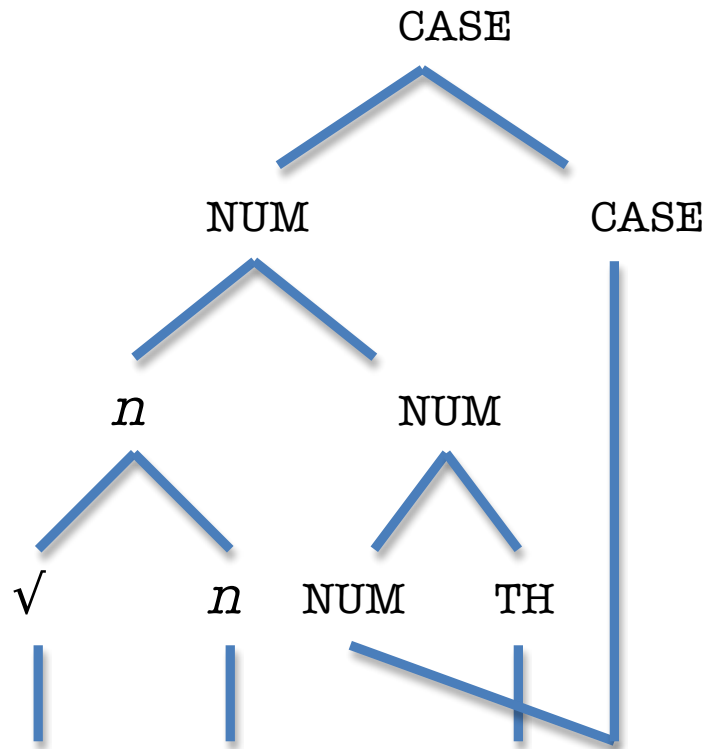
SG.NOM:	mil	-∅		-o	-s	mil	-∅	-o	-s
SG.GEN:	mil	-∅		-∅	-u	mil	-∅	-o	-ju
PL.NOM:	mil	-∅		-∅	-i	mil	-∅	-o	-ja
PL.ACC:	mil	-∅		-∅	-us	mil	-∅	-o	-ja

or

(22)   stem + [ending TH – number.case exponent] →

[stem root – TH[old ending]] + [number, case exponent(s)]

(23)   [stem fov]+[ending [TH -o][number.case -s]] →

[stem [root fov] - [TH -os]] + [number, case -∅, -ju, -ja]

(24)
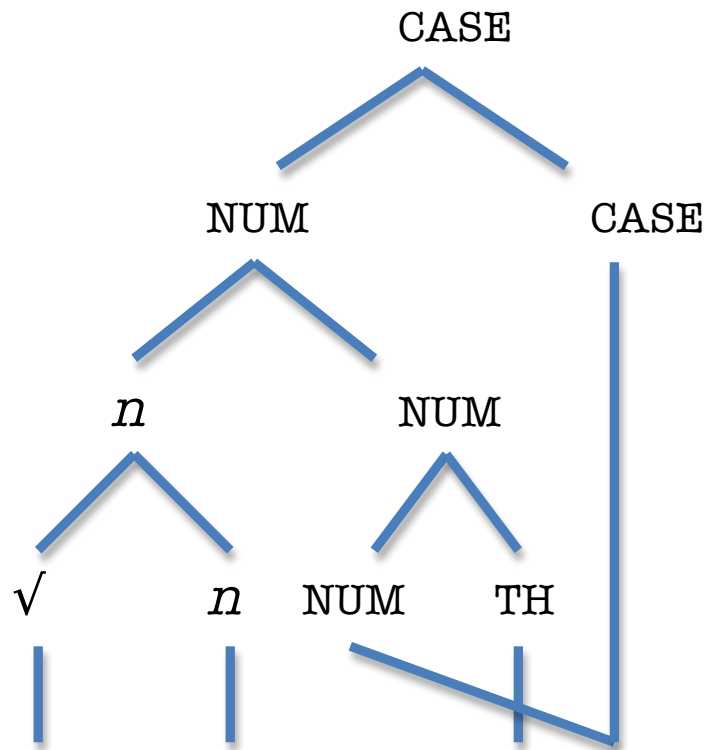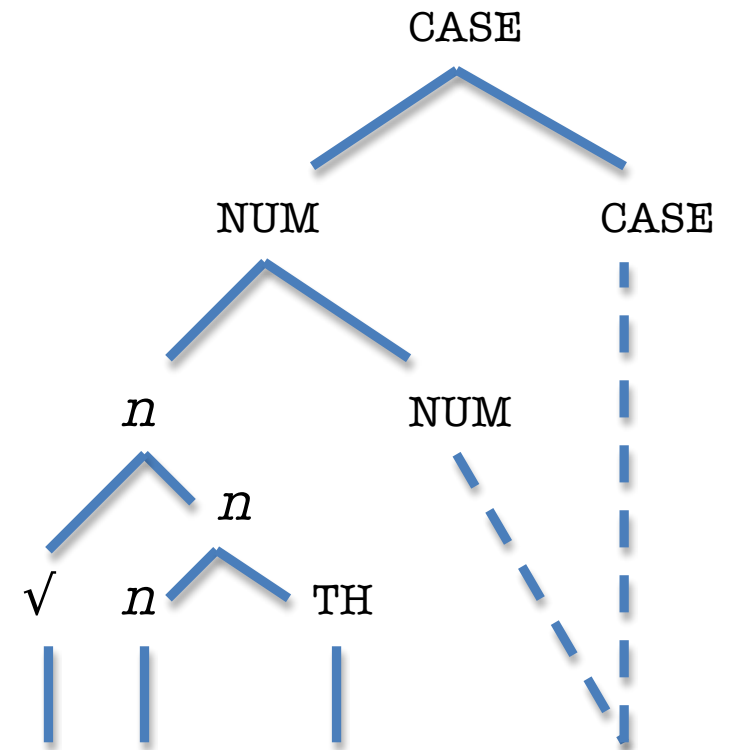
SG.NOM:	fov	-∅	-o	-s	fov	-∅	-os	-∅
SG.GEN:	fov	-∅	-∅	-u	fov	-∅	-os	-ju
PL.NOM:	fov	-∅	-∅	-i	fov	-∅	-os	-ja
PL.ACC:	fov	-∅	-∅	-us	fov	-∅	-os	-ja

The effects of reanalysis

o The emergence of agglutinative patterns

o F-spreading

--> F-spreading is part of the *actualization process of the reanalysis* (in the sense of Harris & Campbell 1995)

F-spreading signals that the TH is not a part of the ending but a part of the stem in situations where its new morphological status is not transparent (i.e. in fusional and mixed patterns).

That is, spreading of [back]/[round] from the TH to the root is a form of *conflation*: TH and Root share the same F, because they belong to the same morphological constituent, i.e the stem.

[See also Postma, Hermans & Van Oostendorp (2006) for a somewhat similar account of A Umlaut in Old High German]
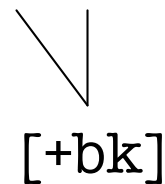
(25)   [stem root - TH] + [ending case, number exponent(s)]

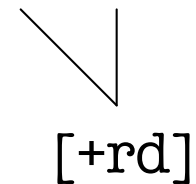   a. ðaskal o s   b. petʃet a   c. koskin o

            [+rd]   [+bk]   [+rd]
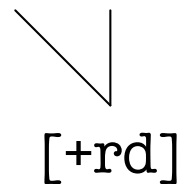
    ðaskolos   petʃata   koskuno

(26)   LICENSE ([+back], σ_{root}): The feature [+back] of a Theme vowel must be licensed on a Root syllable.

(27)   LICENSE ([+round], σ_{root}): The feature [+round] of a Theme vowel must be licensed on a Root syllable.

(28)

/ðaskalos/	LIC ([+round], σ_{root})	SPREAD ([+round])	IDENT[+round]
☞ a. ðaskolos			*
b. ðoskolos			* *!
c. ðaskalos	*!	*	

(29)

/kastro/	*COMPLEX ONSET	DEP(V)	LIC ([+round], σ_{root})	SPREAD ([+round])	IDENT [+round]
a. ko.stro	*!				*
b. ka.su.tu.ru		**!			*
☞ c. kas.tu.ru		*			*

--> Root is a potential licensor because it is a perceptually strong position; it can license more contrasts than other non-prominent positions (for positional privilege, see Steriade 1994, 1995; Beckman 1997, 1998; Zoll 1996, 1997, Crosswhite 2000, Walker 2004, 2005, 2011, Kaplan 2008a,b, a.o.).

--> THV's [round] & [back] features are therefore more salient, if they are also carried by a Root vowel.

Trigger of reanalysis

= the loss of the grammatical specialization of the old endings

Extensive *case syncretism* and *Differential Object Marking* (DOM) neutralized the distinction between nominative and accusative.

Case syncretism in Asia Minor Greek

(Spyropoulos & Kakarikos 2009, 2011)

(30) [acc] → [nom] / [__, +plural]

		Silata	**Phloita**	**Axo**	**Misti**
PL	NOM	tʃobani	arapi	liki	piʃtitʃi
	ACC	tʃobani	arapi	liki	piʃtitʃi
		'shepherd'	'negro'	'wolf'	'shepherd'

(31) [acc] → [nom] / [__,-plural]

		Ulaghatsh			
PL	NOM	xerifos	daskalis	likos	papas
	ACC	xerifos	daskalis	likos	papas
		'man'	'teacher'	'wolf'	'priest'

Asia Minor Greek Differential Object Marking

(Dawkins 1916, Janse 2004, Spyropoulos & Tiliopoulou 2006, Spyropoulos & Kakarikos 2011)

(32) DOM: [acc] → [nom] / [__,–definite, –plural]

    a. *Potamia (Dawkins 1916: Potamia 1, p. 456: 1)*

        istera   pikan   ɣamos   (instead of *ɣamo*)

        afterwards   made-3PL marriage-SG.NOM

        'After that, they got married'

    b. *Delmesos (Dawkins 1916: 94)*

        ðeke   ena   laɣos   (instead of *laɣo*)

        hit-3SG   a   hare-SG.NOM

        'He hit a hare'

--→ Nouns had the same forms for nominative and accusative in both numbers.

--→ These forms looked like having zero exponents for case in the singular, triggering the reanalysis of the whole form as a stem.

The reanalysis was facilitated by the large number of loan nouns of Turkish origin, the declension of which made no nominative – accusative distinction in the singular; the common nom/acc form consisted of the stem alone and no overt case/number exponent (= zero exponent).

(33)

			Delmesos			Silata	Misti	Ulaghatsh
SG	NOM	deŋgiʃ	aqlu	qarɯ	oda	baʃa	qardaʃ
	GEN	deŋgiʒju	aqluðju	qarɯðju	odaðju	baʃaju	qardaʃju
	ACC	deŋgiʃ	aqlu	qarɯ	oda	baʃa	qardaʃ
PL	NOM	deŋgiʒja	aqluðju	qarɯðja	odaðja	baʃaja	qardaʃju
	GEN						
	ACC	deŋgiʒja	aqluðju	qarɯðja	odaðja	baʃaja	qardaʃju
		'sea'	'clever'	'woman'	'room'	'elder brother'	'brother'

5. Conclusions

Vowel harmony → F-spreading

The proposed analysis explains why the process:

- applies only to nouns

- has exceptions (incomplete actualization)

- is bound to a binary domain

☞ The F-spreading process is related to language interference, not via borrowing of the VH-rule from Turkish (Revithiadou et al. 2006, Van Oostendorp 2005), but rather as a reflection of the changes in the nominal morphology that were facilitated by the language contact with Turkish.

F-spreading constitutes a phonological reflection of a reanalysis in the morphological structure of nouns:

--> The Theme vowel loses its morphological status as a part of the ending and forms a stem constituent with the root.

--> F-spreading is a side effect of this stem formation.

--> F-spreading is not triggered in agglutinative patterns because the status of the Theme vowel as a part of the stem is transparent.

NOTES

[1] For descriptions and analyses of Greek nominal inflection see Sotiropoulos (1972), Joseph & Philippaki-Warburton (1987), Clairis & Babiniotis (2005), Ralli (2000, 2004, 2005), Alexiadou & Müller (2008), Holton et al. (2012), a.o.

[2] The structure in (8) is the MS product of the affixation of the relevant functional heads on the root. We take no position as to whether this is the result of head-movement or post-syntactic merger (Embick & Noyer 2001, Embick 2007), since it does not affect the discussion below. For the postulation of the Number head in the functional domains of nouns, see Ritter (1991, 1993), Picallo (1991, 2008) among others; for Greek see the discussion in Alexiadou (2001, 2004) and Alexiadou et al. (2007).

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