Types of Numerical Nouns

Introduction. In the spirit of recent work on numerical expressions (Kayne 2005, Zweig 2005, Ionin & Matushansky 2006), we investigate the syntactic and semantic properties of a particular type of such expressions in Greek, i.e., numerical nouns. We attribute one type of numerical nouns the status of nouns that introduce pseudopartitives (van Riemsdjik 1998, Corver 1999, a.o.), while we consider the rest quantificational adjectives that modify the lexical noun. In doing so, we provide support for the unpronounced suffixes in Kayne (2005), while we clarify aspects of the structure of complex numerals in Ionin & Matushansky (2006).

The facts. Greek numerical nouns are formed from cardinal numerals via the suffixation of two suffixes, *-ada* and *–arja*, also participating in the formation of mainstream nouns in the language. Both are feminine suffixes and the plural of –ada, to be encountered here, is –ades.

1) –ada: Numerical nouns formed via the suffixation of –ada have three interpretations: a) the SET interpretation: such numerical nouns do not count items, but sets of items, hence, the grammaticality contrast in (1). They result when –ada attaches to (most) cardinals up to twenty and to a hundred. b) the High Degree interpretation: when the –ades attaches to (plural) bare nouns, the resulting interpretation is that of a high number, (2a). Just as in English, such bare plurals are formed from the cardinals ten, hundred, thousand (and million), (2b-c). c) the Cardinal Number interpretation: when –ada attaches to *xilja* 'a thousand' the resulting numerical noun is a cardinal number and as such it counts items, just like its English counterpart in the gloss, hence the grammaticality of (3), and the contrast with (1d). In this interpretation we see –ada as the overt counterpart of –NSFX proposed by Kayne (2005) for multiplicands of multiplicative numerals in English, i.e., 'three hundred NSFX'.

2) –arja: Numerical nouns in –arja are preceded by the indefinite determiner *kamia/kanena*, homophonous with the negative and non-emphatic polarity items discussed by Giannakidou (1998). These nominal complexes convey the meaning of an approximate number and are formed from multiplicatives of five, i.e., ten, fifteen, twenty, etc., (4).

The proposal(s). We demonstrate that a number of properties of Greek pseudopartitives (Stavrou 2003) are manifested by the numerical nouns with the SET interpretation: numerical and lexical noun share the same Case (which depends on the position of the nominal complex), no quantifier or relative clause can intervene between numerical and lexical noun, and the verb may agree with either noun. Most importantly, however, when the nominal complex is preceded by the definite determiner, agreement in phi-features obtains between the determiner and the numerical noun (but not with the lexical noun), (5)-(6). b) Numerical nouns with the High Degree interpretation do not demonstrate the same agreement pattern: the determiner agrees in phi-features with the lexical noun instead, (7). c) when numerical nouns with the Cardinal Number interpretation are preceded by the definite determiner, this also agrees with the lexical rather than with the numerical noun, (8). We also demonstrate that all three types of numerical nouns manifest syntactic and semantic properties associated with simplex quantifiers (e.g., license N ellipsis, answer questions of quantity, occur in across the copula copulative clauses, have existential force when without a determiner). We capture the above by considering the numerical nouns with SET interpretation similar to nouns introducing pseudopartives, that is, complement taking nouns. By contrast, we consider the other two types of numerical nouns quantificational adjectives that modify the lexical noun. As a result, our view of complex cardinals, (8), is rendered similar to that of Ionin & Matushansky (2006), only that we do not see the similarity between complex cardinals and phrases such as 'a bunch of roses', to which they refer. As for numerical nouns in –arja, we also hold that they modify the lexical noun, and consider –arja the overt counterpart of –AINE proposed by Kayne (2005). We provide evidence that it is –arja that is licensed by *kamia/kanena*, and not vice-versa, thus the latter items differ in this way (and others, that we discuss) from the standard polarity items in Giannakidou (1998).

1. Numerical nouns in –ada

a. SET interpretation

(1) a. Agorasa mia eksada bires. b. Agorasa tris ekatondades potiria.
bought-1s one six-ada beers bought-1s three hundred-ades glasses
'I bought (a pack of) six beers.' 'I bought three (boxes? of a) hundred glasses.'

c. Irthan se tetrades. d. *To palto tis kostizi tris ekatondades evro.
came-3p in four-ades the coat her cost-3s three hundred-ades euros
'They came in groups of four.' 'Her coat costs three hundred euros.'

b. High Degree interpretation

(2) a. Ekane dekades/ekatondades/xiljades lathi.
made-3s ten-ades/hundred-ades/thousand-ades mistakes
'He made tens/hundreds/thousands of mistakes.'

b. *Ekane ikosades/diakosades lathi.
made-3s twenty-ades/two-hundred-ades mistakes

c. He made tens/hundreds/thousands/*twenties/*two hundreds of mistakes.

c. Cardinal Number interpretation

(3) To gunino palto tis kostizi tris xiljades evro.
the fur coat her cost-3s three thousand-ades euros
'Her fur coat costs three thousand euros.'

2. Numerical nouns in –arja

a. Approximative interpretation

(4) a. Efaga kamia dekarja sokolates. b. Emfanistikan kamia dekapendarja fitites.
ate-1s kamia ten-arja chocolates appeared-3p kamia fifteen-arja students
'I ate about ten chocolates.' 'About fifteen students showed up.'

Agreement patterns

Pseudopartitives

(5) I/*ta pende decades molivia pou agorasa itan skarta.
the-**fem/neut** five ten-ades-**fem** pencils-**neut** that bought-1s were defective
'The fifty (five sets of ten) pencils that I bought were defective.'

a) -ada: SET interpretation

(6) I /*ta pende dekades glika pu efages …
the-**fem/neut** five dek-ades-**fem** pastries-**neut** that ate-2s
'The fifty (five sets of ten) pastries that you ate …'

b) -ada: High Degree interpretation

(7) Ta/*I dekades lathi tu odigisan stin apolisi tu.
the-pl-**neut/fem** ten-ades-**fem** mistake-pl-**neut** his led to-the firing his
'His tens of mistakes led to his firing.'

c) -ada : Cardinal Number intepretation

(8) Ta/*I eksi xiljades spitia pu vomvardistikan...
the-pl-**neut/fem** six ten-ades-**fem** houses-pl-**neut** that were-bombed
'The six thousand houses that were bombed ...'

-arja : aproximative interpretation

(9) Ta/*I kamia dekarja mandarinia pu efaga me piraksan.
the-**neut/fem** kamia-**fem** ten-arja-**fem** tangerines-**neut** that ate-1s me spoiled
'The some ten tangerines I ate spoiled me.'

Corver, N. 1998. 'Predicate Movement in Pseudopartitive Constructions', in A. Alexiadou & C. Wilder (eds.) *Possessors, Predicates and Movement in the Determiner Phrase*, John Benjamins • Giannakidou, A. 1998. *Polarity Sensitivity as (non)veridical dependency*, John Benjamins • Ionin, T. & O. Matushansky. 2006. 'The Composition of Complex Cardinals', to appear in the *Journal of Semantics* • Kayne, R.S. 2005. 'A Note on the Syntax of Numerical Bases', Ms., NYU • Zweig, E. 2005. 'Nouns and Adjectives in Numeral NPs', *Proceedings of NELS 33.*