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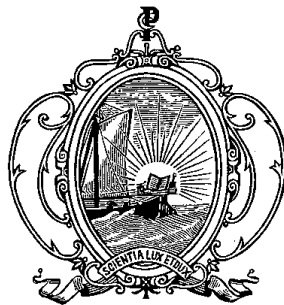
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## **BILINGUISME ET TERMINOLOGIE GRAMMATICALE GRÉCO-LATINE**

Édité par

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# ΑΝΑΛΟΓΙΑ, ANALOGIA, PROPORATIO, RATIO: LOANWORDS, CALQUES, AND REINTERPRETATIONS OF A GREEK TECHNICAL WORD

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Analogy is a cardinal principle in ancient grammar<sup>1</sup>. First, Alexandrian grammarians used it in their philological work on ancient authors. Then, analogy was introduced into Latin grammar and from the 1st cent. A.D. it became a basic criterion for working out grammatical rules. It was in this sense that it was then inherited by medieval and modern grammar. In this paper I would like to draw attention to a very specific point, examining how Latin grammarians used the Greek term ἀναλογία and how they translated it into Latin<sup>2</sup>.

## 1. Ἀναλογία as a mathematical concept

We will start with a brief analysis of the Greek term. Ἀναλογία comes from mathematical language and indicates the procedure of mathematical proportion, which is based on the principle of similitude:

Ps.-Heron, *Def.* 134, 12: Ἀναλογία ἐστὶν ἡ τῶν λόγων ὁμοιότης.  
“Analogy is similarity of ratios”.

The most detailed account of the theory of proportion is to be found in the *Elementa* of Euclid, in Book V (with reference to magnitudes in general) and Book VII (with reference to the particular case of numbers).

Euclides, *El.* VII, *def.* 20 Ἀριθμοὶ ἀνάλογόν εἰσιν, ὅταν ὁ πρῶτος τοῦ δευτέρου καὶ ὁ τρίτος τοῦ τετάρτου ἰσάκις ἢ πολλαπλάσιος ἢ τὸ αὐτὸ μέρος ἢ τὰ αὐτὰ μέρη ᾖσιν.

<sup>1</sup> On analogy in general, cf. Fehling (1956; 1957); Blank (1982: especially ch. I. 1; p. 11-12; 24-28, with bibliography; 1994; 1998: XXXIV-XL).

<sup>2</sup> The fullest account on all the translations for ἀναλογία, ἀνάλογος (and ἀνωμαλία and ἀνόμαλος) in Latin grammarians is to be found in Woldt (1911). However, though fundamental, his work is limited to a list of all the attested translations, without trying to formulate any conclusion on the (possible) grounds underlying so many different Latin translations for this unique Greek word. This paper tries to account for this.

“Numbers are proportional when the first is the same multiple or the same part, or the same parts, of the second that the third is of the fourth” (Heath 1956: II., 278).

The mathematical concept of analogy was taken over by the Greek grammarians, from Aristophanes of Byzantium and Aristarchus of Samothrace onwards. In their analysis the usage of analogy keeps its original value, in the sense that they build up a real mathematical proportion in order to find out morphological forms. To determine a morphological form, it is sufficient to refer to another firm paradigm, morphologically similar to the one at issue and by means of a pure mathematical procedure it is possible to establish all the other inflections. Aristarchus already used this device; he used two term proportions, that is comparisons between two similar forms, in order to fix a reading in his Homeric text. For example in *Iliad* IV. 235 he proposed to read  $\psi\epsilon\upsilon\delta\acute{\epsilon}\sigma\sigma\iota$  “false (dat.)” and not  $\psi\epsilon\acute{\upsilon}\delta\epsilon\sigma\sigma\iota$ , taking as a proof the similar  $\sigma\alpha\phi\acute{\epsilon}\sigma\sigma\iota$  “clear (dat.)”. Aristarchus also used four term proportions, that is a relation among four forms, one of which is uncertain. For example, in order to find out the present participle of  $\pi\epsilon\acute{\iota}\rho\omega$  “to run through” ( $\pi\epsilon\acute{\iota}\rho\omega\nu$ , or  $\pi\epsilon\iota\rho\acute{\omega}\nu$ ?) in *Iliad* xxiv. 8, Aristarchus looked for a similar verb, such as  $\kappa\epsilon\acute{\iota}\rho\omega$  “to shear”, and built up a four member proportion:  $\kappa\epsilon\acute{\iota}\rho\omega : \kappa\epsilon\acute{\iota}\rho\omega\nu = \pi\epsilon\acute{\iota}\rho\omega : X$ . Through this device he could easily find out the present participle of  $\pi\epsilon\acute{\iota}\rho\omega$ , which was  $\pi\epsilon\acute{\iota}\rho\omega\nu$ . That  $\acute{\alpha}\nu\alpha\lambda\omicron\gamma\iota\alpha$  was a mathematical principle was thus clear to the Greek grammarians, who wanted to find a reliable means to proceed in fixing the correct spelling and morphology of doubtful forms<sup>3</sup>.

## 2. *Proportio* and *analogia*

What about the Latins? The Latins inherited the Greek  $\acute{\alpha}\nu\alpha\lambda\omicron\gamma\iota\alpha$  in technical, scientific meaning and translated it with *proportio*. The evidence and the fullest account of this reception in its mathematical sense can be found in Cicero’s *Timaeus*. Translating the Platonic text where, in a purely mathematical context, the word  $\acute{\alpha}\nu\alpha\lambda\omicron\gamma\iota\alpha$  recurs<sup>4</sup>, Cicero feels the need to explain what  $\acute{\alpha}\nu\alpha\lambda\omicron\gamma\iota\alpha$  is:

<sup>3</sup> Cf. Siebenborn (1976: 56-72).

<sup>4</sup> Plato, *Tim.* 31b8: δύο δὲ μόνω καλῶς ξυνίστασθαι τρίτου χωρὶς οὐ δυνατόν· δεσμὸν γὰρ ἐν μέσῳ δεῖ τινὰ ἀμφοῖν ξυναγωγὸν γίνεσθαι. δεσμῶν δὲ κάλλιστος ὅς ἂν αὐτὸν καὶ τὰ ξυνδόμενα ὅ τι μάλιστα ἐν ποιῇ· τοῦτο δὲ πέφυκεν ἀναλογία

Cicero, *Tim.* XIII. 11-14: [...] id optime adsequitur, quae Graece ἀναλογία, Latine (audendum est enim, quoniam haec primum a nobis novantur) comparatio proportiove dici potest.

“Therefore it follows straightforwardly that the Greek ἀναλογία can be translated into Latin (we must dare to say, since we are coining these terms for the first time) as comparison or proportion”.

The same concept recurs in Vitruvius, but here it is more oriented towards the geometrical field:

Vitruvius, *De Arch.* III. 1: Aedium compositio constat ex symmetria, cuius rationem diligentissime architecti tenere debent. ea autem paritur a proportionem, quae graece *analogia* dicitur. proportio est ratae partis membrorum in omni opere totiusque commodulatio, ex qua ratio efficitur symmetriarum. namque non potest aedis ulla sine symmetria atque proportionem rationem habere compositionis, nisi uti ad hominis bene figurati membrorum habuerit exactam rationem.

“The planning of temples depends upon symmetry: and the method of this architects must diligently apprehend. It arises from proportion (which in Greek is called *analogia*). Proportion consists in taking a fixed module, in each case, both for the parts of a building and for the whole, by which the method of symmetry is put into practice. For without symmetry and proportion no temple can have a regular plan; that is, it must have an exact proportion worked out after the fashion of the members of a finely-shaped human body” (Granger 1931: 159).

Both Cicero and Vitruvius refer to the mathematical ἀναλογία, the proportion. Cicero uses also the term *comparatio*, which is nothing but the description of what one does when dealing with a proportion. More interestingly, both Cicero and Vitruvius do not use the Greek term, ἀναλογία, but a Latin word, the semantic calque *proportio*. One could ask whether this is a precise translation or not. Strictly speaking it is not, as the Greek word derives from λόγος plus the preposition ἀνά. In Latin the same concept would be expressed not by a compound but by a syntagm like *secundum rationem*. *Proportio*, nevertheless, is a good substitute for it.

I now turn to Latin grammar. As is well known, we have lost most of the grammatical works before Varro. However, we can obtain some

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κάλλιστα ἀποτελεῖν. “But it is not possible that two things alone should be conjoined without a third; for there must be some intermediary bond to connect the two. And the fairest of bonds is that which most perfectly unites into one both itself and the things which it binds together; and to effect this in the fairest manner is the natural property of proportion” (Bury 1961: 59). Then Plato goes into a long explanation of the different kinds of mathematical proportions.

information from later sources. Priscian (*G.L.* II, 385. 1) quotes a treatise *De proportione* written by a certain Staberius Eros<sup>5</sup>. Staberius lived in the age of Sulla and was the teacher of Brutus and Cassius. He is definitely the first known Latin analogist. We do not have any fragments of his work, apart from this title. However, it is very interesting that for the title of his work on the basic principle of Hellenistic grammar Staberius did not use the Greek word, but adopted the Latin translation *proportio*. This choice is consistent with the normal Latin approach to the τέχνη γραμματική, as Latin grammarians tend to translate Greek grammatical terms into Latin. As seen before, *proportio* was the right translation, keeping also its mathematical sense. What happens later?

Varro is the first author to speak of analogy whose work has survived. He dedicates three books (VIII, IX and X) of his *de Lingua Latina* to the question of analogy. When he first introduces the concept, Varro adopts the Greek term ἀναλογία:

Varro, *De Ling. Lat.* VIII. 23: [...] quod utraque declinatione alia fiunt similia, alia dissimilia, de eo Graeci Latinique libros fecerunt multos, partim cum alii putarent in loquendo ea uerba sequi oportere, quae ab similibus similiter essent declinata, quas appellarunt ἀναλογία, alii cum id neglegendum puterent ac potius sequendam <dis>similitudinem, quae in consuetudine est, quam uocarunt ἀ<v>ωμαλία, cum, ut ego arbitror, utrumque sit nobis sequendum, quod <in> declinatione uoluntaria sit anomalia, in naturali magis analogia.

“Since in the two kinds of derivation some things approach likeness and others become unlike, the Greeks and the Latins have written many books on the subject: in some of them certain writers express the idea that in speaking men ought to follow those words and forms which are derived in similar fashion from like starting-points, which they called the product of Analogy; and others are of opinion that this should be disregarded and rather men should follow the dissimilar and irregular, which is found in ordinary habitual speech, which they called the products of Anomaly. But in my opinion we ought to follow both, because in voluntary derivation there is Anomaly, and in the natural derivation there is even more strikingly Regularity” (Kent 1979: 389-391).

In presenting the doctrine of analogy Varro starts from the Greek term in order to represent Latin grammar as the natural heir of the Greek τέχνη γραμματική. Moreover, in Varro the original mathematical sense of the principle of ἀναλογία is well preserved, as book X. 37 proves:

<sup>5</sup> Cf. *GRF*, 106-107 and Funaioli (1929).

Varro, *De Ling. Lat.* X. 37: Sequitur tertius locus, quae sit ratio proportione; <e>a Graece uocatur ἀνὰ λόγον; ab analogo dicta analogia. Ex eodem genere quae res inter se aliqua parte dissimiles rationem habent aliquam, si ad eas duas alterae duae res allatae sunt, quae rationem habeant eandem, quod ea uerba bina habent eundem λόγον, dicitur utrumque separatim ἀνάλογον, simul collata quattuor ἀναλογί<i>α.

“There follows the third topic: what is the *Ratio* or Relation that is *pro portione* ‘by proportionate likeness’? This is in Greek called ‘according to *logos*’; and from analogue the term *Analogia* or Regularity is derived. If there are two things of the same class which belong to some relation though in some respect unlike each other, and if alongside these two things two other things which have the same relation are placed, then because the two sets of words belong to the same *logos* each one is said separately to be analogue and the comparison of the four constitutes an *Analogia*” (Kent 1979: 563).

This is the only other passage where Varro uses the Greek term ἀναλογία<sup>6</sup>, as in the rest of the work he prefers to use the loanword *analogia*. In other words, Varro borrows the term from Greek and transcribes it into the Latin alphabet. Here some caution is necessary, as we have to take into account the possibility that, within the manuscript tradition, words written in Greek alphabet were transcribed into Latin. Therefore, when we find a Greek word transliterated into Latin, it is possible that it is not the original reading. On the contrary, the opposite is far less likely, as Greek words in Latin texts tend to be original<sup>7</sup>. This is even more likely in the two passages quoted above, especially in *De Ling. Lat.* X. 37, where the analysis of the etymology is conceivable only if we suppose that Varro started from the Greek ἀναλογία<sup>8</sup>.

It is significant that Varro uses the Greek term in a chapter where he is dealing with the exact mathematical meaning of the concept. In the following chapters (*De Ling. Lat.* X. 43-50) Varro continues his exposition of the theory of analogy in properly mathematical terms so that we cannot have any doubts about his mathematical view of the doctrine of

<sup>6</sup> In fact in Varro, *De Ling. Lat.* X. 39, the only other attestation of ἀναλογία, the Greek word recurs in a different context, as Varro is using here the Greek name as an example of analogical derivation, ἀναλογία derives from ἀνάλογον. The expression ἀνὰ λόγον recurs in *De Ling. Lat.* VIII. 32; 55; X. 2 (*ratio* = λόγος).

<sup>7</sup> On this problem cf. Holtz (1981: 525-526). On the question of the Latin orthography of Greek words, cf. Schulze (1894) and Fraenkel (1948: 136).

<sup>8</sup> When we find the Graecism *analogia*, we cannot say whether it was felt as a pure transcription or whether it was perceived as a Latin word. But when we find forms such as the accusative *analogiam* or the genitive *analogiae* we can suppose that at a certain point *analogia* was considered a pure Latin word. Normally Varro declines *analogia* according to Latin, but we find many cases of a Greek accusative *analogian*.

analogy<sup>9</sup>. It is also interesting that Varro uses here the expression *pro portione* saying that it corresponds to Greek ἀνά λόγον. As already seen, *proportio* is the technical Latin translation of ἀναλογία. Varro uses it, but far less often than *analogia* (22 occurrences of *proportio* against 167 of *analogia*). In all the passages where Varro adopts this term, *proportio* has the technical meaning of mathematical proportion used to determine a morphological declension<sup>10</sup>. Thus Varro uses the Latin term *proportio* when he wants to stress the idea of a mathematical pattern underlying a regular declension; but to indicate the essence of the grammatical doctrine he always uses the loanword *analogia*. This is evident when we read a passage where these two concepts are used together:

Varro, *De Ling. Lat.* IX. 62: quare quocumque progressa est natura cum usu uocabuli, similiter proportione propagata est analogia.

“Therefore as far as the nature and the use of a word have jointly advanced, so far has Regularity been extended in like manner by a corresponding relationship” (Kent 1979: 485).

*Proportio* here is not a perfect synonym of *analogia*, but the device with which analogy can spread over. Indeed *analogia* and not *proportio* is the technical term used by Varro to refer to the linguistic doctrine of analogy<sup>11</sup>.

The same pattern can be found in Quintilian<sup>12</sup> and in Gellius<sup>13</sup>, who, as Varro before them, use *proportio* when introducing the concept of

<sup>9</sup> On this problem, cf. Taylor (1977).

<sup>10</sup> Cf. Varro, *De Ling. Lat.* VIII. 50; 57; 68; 78; 80; 83; IX. 61; 83; 110; X. 9; 47; 51. In *De Ling. Lat.* IX. 27; 29; 30; 33; 48, *proportio* is used to describe the relation which links the limbs of the human figure or the different parts of the human soul in order to explain that everything in nature is proportionally ordered. Language too must be like that.

<sup>11</sup> Cf. Cavazza (1981a: 210). According to Dahlmann (1966: 9-10), this confusion regarding many grammatical concepts and the way to express them was due to the fact that Greek grammatical terminology was not completely assimilated by the time of Varro.

<sup>12</sup> Quint., *Inst. Or.* I. 6. 3: *omnia tamen haec exigunt acre iudicium, analogia praecipue: quam proxime ex Graeco transferentes in Latinum proportionem uocauerunt.* “But all these criteria need keen judgement, especially Analogy, a term which those who translate from Greek most closely have rendered as *proportio*” (Russell 2001: 163). On the grammatical chapters of Quintilian’s *Institutio Oratoria*, cf. Colson (1914).

<sup>13</sup> Gell., *Noct. Att.* II. 25: *In Latino sermone, sicut in Graeco, alii ἀναλογίαν sequendam putauerunt, alii ἀνωμαλίαν. Ἀναλογία est similitum similis declinatio, quam quidam Latine “proportionem” uocant. Ἀνωμαλία est inaequalitas declinationum, consuetudinem sequens. Duo autem Graeci grammatici illustres, Aristarchus et Crates, summa ope ille ἀναλογίαν, hic ἀνωμαλίαν defensitauit. M. Varronis liber ad Ciceronem De lingua Latina octauus nullam esse obseruationem similitum docet inque omnibus paene uerbis consuetudinem dominari ostendit [...]* “In the Latin language, just as in Greek, some have thought

analogy for the first time, and they want to explain what it is. But then, when they have to deal with this concept and introduce examples of it, they always use the loanword *analogia*<sup>14</sup>. The same happens in later grammarians. Terentius Scaurus<sup>15</sup>, Diomedes<sup>16</sup>, Servius (*Commentarius in Donatum*)<sup>17</sup>, Pompeius<sup>18</sup>, Consentius<sup>19</sup> and Isidorus of Seville<sup>20</sup> use both terms. They use *proportio* only when they present the Greek term ἀναλογία, and they say that it corresponds to Latin *proportio*. But when they deal with declension they use only the term *analogia*<sup>21</sup>.

The approach of Priscian is slightly different. As is well known, among the Roman grammarians he is the one most attached to Greek models<sup>22</sup>. He does not explain the question of analogy; no full presentation of this basic concept occurs in his treatise. Nevertheless, he uses it, taking its meaning for granted. We find many passages where he chooses a certain morphological form claiming the principle of analogy. Indeed he uses the

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that the principle of ἀναλογία should be followed, others that of ἀνωμαλία. Ἀναλογία is the similar inflection of similar words, which some call in Latin *proportio* or 'regularity'. Ἀνωμαλία is irregularity in inflection, following usage. Now two distinguished Greek grammarians, Aristarchus and Crates, defended with the utmost vigour, the one analogy, the other anomaly. The eighth book of Marcus Varro's treatise *On the Latin Language*, dedicated to Cicero, maintains that no regard is paid to regularity, and points out that in almost all the words usage rules" (Rolfe 1954: 209). Cf. Cavazza (1981a: 209).

<sup>14</sup> The only exception is in *Inst. Or.* I. 6. 9. 2, where Quintilian uses *proportio* when discussing a question of verbal declension.

<sup>15</sup> *G.L.* VII, 12. 5: *reccorrigitur uero regulis tribus, historia, originatione, quam Graeci ἐτυμολογίαν appellant, proportione, quae Graece ἀναλογία dicitur*. "This is corrected by three rules, history, derivation, which the Greeks call ἐτυμολογία, and proportion, which in Greek is ἀναλογία".

<sup>16</sup> *G.L.* I, 456. 5: *regula sermonis, quam Graeci analogian uocant, quidam ex nostri proportionem*. "Rule of speech, which the Greeks call analogy, some of us, proportion". Cf. also Diomedes, *G.L.* I, 384. 15.

<sup>17</sup> *G.L.* IV, 435. 15: *analogia dicitur ratio declinationis nominum inter se omni parte similibus; Latine proportio uocatur*. "Analogy is the relationship in declension of nouns which are similar in every respect; in Latin it is called proportion".

<sup>18</sup> *G.L.* V, 197. 22: *quae est analogia? comparatio similibus, Latine proportio dicitur: analogia Graece, Latine proportio. sed ita illam definit, 'analogia est comparatio'*. "What is analogy? A comparison of similar things; in Latin it is called proportion; in Greek analogy. In Latin, proportion, and he (i.e. Donatus) defines it: 'analogy is comparison'".

<sup>19</sup> *G.L.* V, 353. 19: *analogia est quam nos proportionem dicimus*. "Analogy is what we call proportion".

<sup>20</sup> Isid., *Etym.* I. 28: *Analogia Graece, Latine similibus comparatio sive proportio nominatur*. "Analogy in Greek, in Latin it is called comparison of similar forms or proportion". According to Fontaine (1983: 45) Isidorus depends on Pompeius.

<sup>21</sup> Cf. Diomedes in *G.L.* I, 307. 22; 375. 18; 377. 22; 378. 14; 384. 21; 387. 4; and Martianus Capella, *De Nupt.*, 83. 4; 88. 22; 91. 3; 103. 14; 269. 11 and 15 Willis.

<sup>22</sup> On the influence of Greek grammar on Latin grammarians, cf. Lindsay (1916: 39-41).



loanword *analogia* in most of the passages. Typical of his technical vocabulary is the expression "*secundum analogiam*"<sup>23</sup>. Priscian also uses the Latin expression "*secundum proportionem*", but far less frequently (fifty-five occurrences of "*secundum analogiam*" against seven occurrences of "*secundum proportionem*")<sup>24</sup>.

In the same line, Charisius uses the loanword *analogia* almost exclusively<sup>25</sup>; only in one passage he speaks of *proportio* (236. 8 B. = *G.L.* I, 182. 32). It is worthwhile to note that the term *proportio*, which, as said, occurs only once, is used by Charisius without any explanation. On the other hand the later grammarians, such as Probus, Cledonius, Ps. Palae-mon and Donatianus only use the Latin loanword *analogia* and never the proper translation *proportio*. With all this evidence we can notice a tendency to use the Latin translation *proportio* less and less, especially among later grammarians from the 4th century onwards.

We can try to find a reason for this. If Latin grammarians had been using the Latin *proportio*, the mathematical meaning of the term would have come out clearly, as we have seen that *proportio* was also a technical term used in mathematics and geometry. On the contrary, with the loanword *analogia* this implication was not so evident. For us it is the same; proportion is something strictly related to mathematics, while, when we speak of analogy, we do not feel the mathematical meaning underlying this word as primary, but we take it as referring to generic similarities. I think that the approach of Latin grammarians, at least the later ones, was quite similar.

### 3. Analogy as *similitudo*

This can perhaps be confirmed when we turn to the analysis of the definition of analogy in Latin grammatical works. Charisius (149. 22-26 B.

<sup>23</sup> Cf. *G.L.* II, 67. 17; 95. 15; 97. 4; 99. 15 and *passim*; *G.L.* III, 2. 29; 7. 6 and 20; 10. 12; 77. 13 and *passim*. The term *analogia* alone recurs also in *G.L.* II, 43. 16; 166. 8; 264. 14; 511. 4; III, 408. 7.

<sup>24</sup> Cf. *G.L.* II, 457. 5; 487. 15; 510. 15; 523. 11; 527. 10; 543. 2; III, 9. 6. Cf. also *G.L.* II, 290. 1; 371. 18; 502. 4. In a strictly mathematical sense *proportio* recurs in Prisc., *G.L.* III, 410. 14, 17 and 21; on the contrary, in a less technical sense *analogia* is found in *G.L.* II, 2. 16.

<sup>25</sup> Cf. Charisius 1. 9 B. (= *G.L.* I, 7); 62. 10, 15, 20, 22 and 24 B. (= *G.L.* I, 50. 22 and 25; 51. 3, 5 and 6); 63. 15 B. (= *G.L.* I, 51. 17); 67. 5 B. (= *G.L.* I, 53. 28); 70. 23 B. (= *G.L.* I, 56. 16); 71. 8 (= *G.L.* I, 57. 5); 74. 10 B. (= *G.L.* I, 60. 1); 135. 5 B. (= *G.L.* I,

= *G.L.* I, 116. 30-117. 1) and Donatianus (*G.L.* VI, 275. 16-276. 5) adopt the Greek definition according to which analogy is a συμπλοκή λόγων ἀκολουθῶν<sup>26</sup>, a combination of ratios in regular succession or, as Blank has suggested, a consequent syntactic construction<sup>27</sup>. Both Charisius and Donatianus explicitly say that this is the definition Greeks give to analogy. This was perhaps felt as the most technical definition, and therefore was given in Greek, as a tribute to the πρῶτοι εἰρηταί of the doctrine of analogy<sup>28</sup>.

Normally, another definition is found in Latin, focusing not on the original, mathematical meaning of ἀναλογία, but rather on the idea of comparison of similar forms, which is exactly what one does when dealing with analogical forms. We read this definition in most of our Latin sources on analogy, starting with Varro<sup>29</sup>. Gellius (*Noct. Att.*, II. 25) and Cledonius (*G.L.* V, 47. 13) define analogy as *similium similis declinatio*. According to Servius (*G.L.* IV, 435. 15) it is a *ratio declinationis nominum inter se omni parte similia*, while in Quintilian (*Inst. Or.* I. 6. 4) and Pompeius (*G.L.* V, 197. 22) we read that analogy is a *comparatio similia*. This definition occurs again in Isidorus (*Etym.* I. 28: *Analogia Graece, Latine similia comparatio*), who — probably influenced by Quintilian<sup>30</sup> — summarises the concept of analogy in these terms:

106. 2); 145. 12 B. (= *G.L.* I, 113. 25); 149. 21 B. (= *G.L.* I, 116. 29); 149. 22 B. (= *G.L.* I, 116. 30); 175. 25 B. (= *G.L.* I, 138. 18); 236. 21 B. (= *G.L.* I, 183. 8).

<sup>26</sup> Donatianus (*G.L.* VI, 276. 4) translates this into Latin as *conexus orationum consequentium*. In fact the Latin *consequentia* translates the Greek ἀκολουθία: cf. Priscianus in *G.L.* III, 144. 19 (ex Ap. Dysc. *Synt.*, *G.G.* II 2, 139. 7); 183. 2 (ex Ap. Dysc. *Synt.*, *G.G.* II 2, 280. 2); or the Greek τὸ ἀκόλουθον: cf. Prisc. in *G.L.* III, 145. 11 (ex Ap. Dysc. *Synt.*, *G.G.* II 2, 140. 10); 145. 15 (ex Ap. Dysc. *Synt.*, *G.G.* II 2, 141. 9). And *consequens* is ἀκόλουθος: cf. Prisc. in *G.L.* III, 145. 1 (ex Ap. Dysc. *Synt.*, *G.G.* II 2, 140. 3); 145. 14 (ex Ap. Dysc. *Synt.*, *G.G.* II 2, 140. 12).

<sup>27</sup> Blank (1982: 26-27) states (p. 27): “now συμπλοκή is a word often used for syntactic construction, while ἀκόλουθος describes the sentence whose construction is consequent or whose words are in proper agreement with one another. Hence the words συμπλοκή λόγων ἀκολουθῶν themselves would seem to indicate that analogy is consequent syntactic construction”.

<sup>28</sup> Cf. Blank (1982: 16-17), who highlights the “scientific background” of this definition. On the Greek counterpart of it, cf. *infra* n. 31.

<sup>29</sup> Varro, *De Ling. Lat.* VIII. 23: [...] *quod utraque declinatione alia fiunt similia, alia dissimilia [...] partim cum alii putarent in loquendo ea uerba sequi oportere, quae ab similibus similiter essent declinata, quas appellarunt ἀναλογίας [...]*. “Since in the two kinds of derivation some things approach likeness and others become unlike, [...] certain writers express the idea that in speaking man ought to follow those words and forms which are derived in similar fashion from like starting-points, which they called the products of Analogy” (Kent 1979: 389).

<sup>30</sup> Cf. Fontaine (1983: 45, spec. n. 3), who refers to Quint., *Inst. Or.* I. 6. 4.

Isidorus, *Etym.* I. 28: cuius haec uis est ut, quod dubium est, ad aliquid simile, quod non est dubium, referatur, et incerta certis probentur.

"Its (sc. *analogiae*) force is that one can refer what is doubtful to something similar, which is not doubtful, and uncertain things can be confirmed by certain ones".

The Latin definition of *analogia* as *comparatio similiarum* can be the very translation of the Greek τῶν ὁμοιῶν παράθεσις. This is another definition of ἀναλογία that we find in the *scholia* to Dionysios Thrax (*G.G.* I 3, 15. 11; 309. 9, cf. also 454. 17), in Sextus Empiricus (*Adv. math.* 199. 6; 236. 3), in Choeroboschus (*Choerob. Ep. in Psalm.* 4. 24) and Theodosius (*Gramm.* 57. 30)<sup>31</sup>. Latin grammarians thus knew two definitions; one, more technical, in Greek; one, more pragmatic, in Latin. What can this mean? Probably Latin grammarians were well aware of the original mathematical sense of the doctrine of analogy, at least in Greek. But they prefer to adopt a more pragmatic approach to it<sup>32</sup>.

Conclusive evidence that they also had a clear idea of the original meaning of the Greek ἀναλογία even in later times can be found in Martianus Capella. In the 5th century he wrote his treatise *De nuptiis Philologiae et Mercurii*, where he introduces the system of the seven liberal arts. In book III, *De arte grammatica*, Martianus introduces the doctrine of analogy in traditional terms. He translates it into Latin *proportio*<sup>33</sup> and defines it according the traditional view as a *similitudo* among forms<sup>34</sup>. However, in the rest of the work, when dealing with declensions Martianus always uses

<sup>31</sup> *Schol. Dion. Thr.* in *G.G.* I 3, 169. 26-27 = 303. 22-23 is a case on itself. Actually here we read: ἀναλογία δὲ ἐστὶ λόγος ἀποδεικτικὸς καθ' ὁμοίου παράθεσιν τῆς ἐν ἑκάστῳ μέρει λόγου φυσικῆς ἀκολουθίας. "Analogy is a demonstrative canon of the natural consistency in every part of speech through the juxtaposition of something similar". Here the two definitions are combined, as analogy is now a λόγος ἀποδεικτικὸς [...] τῆς ἐν ἑκάστῳ μέρει λόγου φυσικῆς ἀκολουθίας, which is achieved through the παράθεσις ὁμοίου.

<sup>32</sup> Some grammarians notice a sense of greater simplicity in Latin grammar compared to the Greek one: cf. Diomedes, *G.L.* I, 384. 15: *analogia apud nos, id est proportio, praetermissis Graecorum ambagibus simplici modo tam in uerbis quam in nominibus obseruatur*. "Analogy among us, namely *proportio*, is simply observed both in verbs and nouns, leaving aside the circumlocutions of the Greeks". Similarly Charisius 150. 2 B. (= *G.L.* I, 117. 5).

<sup>33</sup> Mart. Cap., *De Nupt.* 81. 15 Willis: *prima nam proportio / dicenda, Graei analogiam quam uocant*. "First we must speak about proportion, which the Greeks call analogy".

<sup>34</sup> Mart. Cap., *De Nupt.* 81. 23 Willis: *analogia est igitur quae latine proportio dicitur, obseruatio similiarum inter se loquularum*. "Analogy is thus what in Latin is called proportion, the observance of similar words".

the loanword *analogia* and never *proportio* (cf. Mart. Cap., *De Nupt.* 83. 4; 88. 22; 91. 3; 103. 14; 269. 11 and 15 Willis)<sup>35</sup>. The Greek technical term ἀναλογία recurs only in book VII, *De arithmetica*, when Martianus introduces the concept of mathematical proportion (Mart. Cap., *De Nupt.* 297. 17 Willis). But then he does not use it anymore, neither does he use the loanword *analogia*, but he adopts a Latin word, *proportio* or *portio* (manuscripts give both readings); cf. *ibid.* 298. 11; 299. 1; 299. 2; 299. 11; 299. 13; 299. 16.

Thus, avoiding all the mathematical implications, the Latin approach to analogy was in some ways less involving than the Greek one, focusing on the similarities of declension and comparison among similar forms<sup>36</sup>. Latin grammarians were thus depending on their Greek predecessors, but they chose the definition that best suited their purposes and translated this into Latin. The Greek ἀναλογία in grammar is thus understood as *similitudo* in declension (opposed to *dissimilitudo*, which corresponds to ἀνωμαλία). We would perhaps go too far in saying that, especially later, *similitudo* is another translation of Greek ἀναλογία<sup>37</sup>. Anyway, both *comparatio* and *similitudo* are concepts underlying the idea of analogy in Latin grammar<sup>38</sup> and are often used in grammatical treatises in order to express the idea of analogy (the first to speak of *nominis similitudo* is Caesar, fr. 11). This is something that we do not find in Greek grammar where ἀναλογία, ἀναλόγως, ἀναλογώτερον are all technical terms which do not have any substitute (ὁμοιότης, παράθεσις occur only as definitions of ἀναλογία but are never used instead of it).

<sup>35</sup> Once he uses *ratio*: Mart. Cap., *De Nupt.* 93. 21 Willis: *contra rationem declinantur*. "They (i.e. the nouns *supplex*, *senex* and *vix*) are declined against rationality".

<sup>36</sup> Cf. Fontaine (1983: 46), who points out that Isidorus shows a trace of the mathematical meaning of the expression in *Etym.* III. 8. 1: "Le terme d'*analogicum* est d'ailleurs utilisé par Isidore pour désigner le rapport arithmétique entre deux nombres: mais cet emploi est unique dans l'œuvre isidorienne et la notion de rapport y reste aussi isolée que le mot. Les liens analogiques que le Sévillan perçoit entre les choses et les êtres sont le plus souvent de caractère qualitatif: ce sont des correspondances, et non des rapports traduisibles en termes mathématiques".

<sup>37</sup> Cavazza (1981a: 210) points out that in Varro *similitudo* does not have a clear technical meaning, due to the uncertainty of most of the technical terminology in Varro (Cavazza 1981a: 212). The same opinion was already voiced by Collart (1954: 329-331), who concluded (p. 330): "Bref, le vocabulaire grammatical de Varron est plein d'incertitudes, de flottements, de lacunes".

<sup>38</sup> Similar to those expressions is *collatio* used by Priscianus in *G.L.* III, 65. 14 (*similitudine uel collatione*).

#### 4. Analogy as *regula*

When stressing the results one can get by using the doctrine of analogy, Latin authors understand ἀναλογία as *regula*. According to Ps.Palaemon (*G.L.* V, 539. 21) analogy is *regula perpetua*<sup>39</sup>. Diomedes (*G.L.* I, 456. 5) defines analogy a *regula sermonis* and Donatus (*G.L.* IV, 379. 3) calls it *regula praeceptorum*. *Regula* obviously is not a precise translation and the fact that we find it only in late grammarians (4th cent.) confirms the idea that with the time the mathematical idea underlying the Greek ἀναλογία was lost. At that time what really concerned grammarians was to order the language in a system with some rules (κανόνες). Analogy was one of the means of doing it and was no longer a heuristic principle, founded on mathematical concepts, by which a precise morphological form could be found. The latter was the way Alexandrian grammarians conceived and used analogy. They did not use analogy to build up a grammar of the Greek language, but as a tool to find out the right reading in their editorial work on classical texts.

#### 5. *Ratio*

Another word, similar to *regula*, but far more interesting and often used in connection with ἀναλογία is *ratio*. Is *ratio* a synonym of *proportio*? In fact, the original meaning of *ratio* in Latin is “account”, “computation”. It is therefore related to mathematics, but it definitely has a meaning, which is not that of *proportio*, as the correspondences in Greek make clear: ἀναλογία = *proportio* and λόγος = *ratio*.

In the Greek mathematical field, there is a clear distinction between λόγος and ἀναλογία. Λόγος in its mathematical sense corresponds to the quality of a magnitude that is commensurable to another<sup>40</sup>; ἀναλογία, on the contrary, indicates the relationship between these two magnitudes<sup>41</sup>.

<sup>39</sup> Ps.Palaemon is not always consistent; actually, in *G.L.* V, 541. 41 he says that the analogy derives from the rules of nouns, where it seems that *regula* is not *analogia*, as he stated in *G.L.* V, 539. 21. Only Consentius, *G.L.* V, 353. 19 distinguishes clearly between *regula* and *analogia*.

<sup>40</sup> Euclides, *El.* V, *def.* 3: Λόγος ἐστὶ δύο μεγεθῶν ὁμογενῶν ἢ κατὰ πηλικότητά ποια σχέσις. “A ratio is a sort of relation in respect of size between two magnitudes of the same kind” (Heath 1956: II, 114).

<sup>41</sup> Euclides, *El.* V, *def.* 6: Τὰ δὲ τὸν αὐτὸν ἔχοντα λόγον μεγέθη ἀνάλογον καλεῖσθω. “Let magnitudes which have the same ratio be called proportional” (Heath 1956: II, 114).

The mathematician Theon, for example, says that proportion is similarity of more than one ratio (Theon Smyrn., *Expos. Rer. Math. ad Leg. Plat. Util.* 82. 6: ἀναλογία δ' ἐστὶ πλειόνων λόγων ὁμοιότης ἢ ταυτότης). This precise distinction is less well preserved in Latin, due to the polysemy of the word *ratio*, especially in grammar. Here quite a wide usage of the term *ratio* is noticeable. As has already been seen, in Varro, *De Ling. Lat.* X. 37, the mathematical relationship between *ratio* = λόγος and *proportio* = ἀναλογία is clearly stated. According to Varro, two ratios of equal value make a proportion. However, Varro very often uses the term *ratio* in his work and not always with this technical meaning; normally *ratio* has a generic sense of "regularity", or "theory of regular declension" or "logical relationship"<sup>42</sup>. In this sense *ratio* can be found as a definition of many grammatical concepts, without any technical meaning: etymology is a *ratio* in Gellius (*Noct. Att.* I. 18. 1: *ratio etymologica*; I. 18. 3: *ratio uocabulorum*; XIX. 13. 3: *ratio etymologiae*). In the same line, Probus defines both analogy and anomaly as *rationes* (*G.L.* IV, 47. 20 and 23; 48. 1).

We have a particular case where *ratio* has a technical meaning, distinct from the one of *analogia*. In Priscian, in Pompeius and, more precisely, in Gellius, the very Latin translation of the Greek expression ἀναλογίας ἐκλογισμός is present. It is *ratio analogiae* in Priscian (*G.L.* II, 310. 18; 561. 16) and in Pompeius (*G.L.* V, 197. 31) or, in Gellius, *ratio proportionis* (*Noct. Att.* XV. 9. 4).

All of the usages are more or less related to the concept of a certain rational order. Indeed it is very common to define analogy as a *ratio* in the sense of a somehow ordered relation between words, as in Servius (*G.L.* IV, 435. 15) and in Consentius (*G.L.* V, 353. 21)<sup>43</sup>. Here we can refer to a passage from Cicero's *Brutus* (*Brut.* 253) where Cicero speaks of Caesar who *de ratione Latine loquendi accuratissime scripsit*. Cicero refers to Caesar's treatise *De analogia*. He translates its title into Latin

<sup>42</sup> Quite peculiar is the usage of *ratio* in Varro, *De Ling. Lat.* VIII. 83-84 (*Habent plerique libertini a municipio manumissi, in quo, ut societatum et fanorum serui, non seruarunt proportione rationem, et Romanorum liberti debuerunt dici ut a Fauentia Fauentinus, ab Reate Reatinus sic a Roma Romanus*) where *ratio* means the logical relationship according to the *proportio*. It is clear that here *ratio* cannot be a synonym of *proportio* / *analogia*.

<sup>43</sup> This idea of *analogia* as *ratio*, in the sense of ordered relation between words, corresponds to what we read in Diomedes (*G.L.* I, 439. 20 = Varro, fr. 115) and Charisius (62. 20 B. = *G.L.* I, 51. 3): *analogia sermonis a natura prodicti ordinatio est (secundum technicos)*: "(According to grammarians) analogy is the order in natural discourse".

and he uses the expression *De ratione*. Perhaps this is not a pure translation, as we may suppose that here Cicero is not translating, but simply paraphrasing the work of Caesar. What is interesting is that Cicero chooses the word *ratio*. The context is not strictly grammatical, but rhetorical and Caesar is quoted as a master of *Latine loqui accuratissime*. The work of Caesar was not concerned with grammar and declension in the strict sense. He did not seek to systematize Latin, but aimed at correctness in speech. His work is aimed therefore at *Latinitas*<sup>44</sup>.

There are many passages and authors dealing with the problem of *Latinitas* and with the elements that are part of it. The question about the number and the exact meaning of the *κανόνες Latinitatis* is one of the most disputed among modern scholars and it is not my intention to treat it now<sup>45</sup>. It is sufficient here to have a look at some of these *κανόνες*. According to Varro, transmitted by Diomedes, *Latinitas* consisted of four principles: *natura*, *analogia*, *consuetudo* and *auctoritas*<sup>46</sup>. Diomedes goes on maintaining the equivalence of *ratio* and *analogia*. In fact, when explaining the principle of *auctoritas*, he says that this is a principle used after the other three: *natura*, *consuetudo* and analogy. To express the last of these criteria, he does not use the loanword *analogia*, but *ratio*. The equivalence of *ratio* and *analogia* is exactly what we have found in Cicero.

In Quintilian, on the contrary, the criteria for *Latinitas* are *ratio*, *uetustas*, *auctoritas*, and *consuetudo*<sup>47</sup>. According to Quintilian, *ratio* is not only *analogia*, but also *etymologia*. The same equivalence recurs in Donatianus (*G.L.* VI, 275. 13)<sup>48</sup>.

<sup>44</sup> That *De analogia* was a rhetorical work and not a grammatical one is proved by Dahlmann (1935: 265-266) and Papke (1988: 344). On the history of the term *Latinitas*, cf. Díaz y Díaz (1951) and Desbordes (1991).

<sup>45</sup> On this question, cf. Siebenborn (1976: 53-55, 159-163) and Cavazza (1981b: 142-153).

<sup>46</sup> *G.L.* I, 439. 15 (= Varro, fr. 115): *Latinitas est incorrupte loquendi obseruatio secundum Romanam linguam. constat autem ut adserit Varro, his quattuor, natura analogia consuetudine auctoritate*. "Correct Latin is the observance of speaking without corruption according to the Roman language. As Varro says, it consists of these four elements: nature, analogy, use and authority". Cf. also Charisius 62. 14 B. (= *G.L.* I, 50. 25).

<sup>47</sup> Quint., *Inst. Or.* I. 6. 1: *sermo constat ratione uetustate auctoritate consuetudine. rationem praestat praecipue analogia, nonnumquam etymologia*. "Language is based on Reason, Antiquity, Authority and Usage. Reason is grounded especially on Analogy, but sometimes also on Etymology" (Russell 2001: 161).

<sup>48</sup> It may be interesting to observe that we do not find anything similar to this equation in Greek grammar where *ἀναλογία* and *ἐτυμολογία* are never brought together and never are equal to *λόγος*.

Later grammarians preserve another list. According to Augustinus (*G.L.* V, 494. 4), Maximus Victorinus (*G.L.* VI, 189. 3) and Audax (*G.L.* VII, 322. 22), *Latinitas* is formed by three elements: *ratio*, *consuetudo* and *auctoritas*. We find *ratio* again. What is it? *analogia*? *analogia* + *etymologia* as Quintilian wants it to be? or *natura* + *analogia* in order to correspond to what Varro thinks are the four principles of *Latinitas* (*natura*, *analogia*, *consuetudo* and *auctoritas*)?

As already stated, it is not my intention here to analyze the various problems posed by these different lists. I just want to pay attention to one detail. In Greek culture the four criteria of Ἑλληνισμός were: ἐτυμολογία, ἀναλογία, συνήθεια, ἱστορία<sup>49</sup>. All these Greek words have a precise correspondence (as a calque or a loanword) in Latin: ἐτυμολογία is *etymologia*, ἀναλογία is *proportio* or *analogia*, συνήθεια is *consuetudo*, ἱστορία is *auctoritas*. As regards the principle of ἀναλογία, what is noticeable is that, whatever list we take into account, we never find the Latin term *proportio*. We do find the loanword *analogia*, but only once, in Varro. In the other grammarians, starting from Quintilian, we only find *ratio*. In some of them (Cicero, Diomedes) *ratio* seems to be identical with *analogia*. Quintilian and Donatianus, on the other hand, maintain that *ratio* consists of *analogia* and *etymologia*. Later grammarians never speak of *analogia* with reference to *Latinitas*.

What can we conclude? Probably that *ratio* was used to indicate the principle of analogy when speaking about *Latinitas*. This does not mean of course that *ratio* was felt as a correct translation of Greek ἀναλογία. In any case, when dealing with the problem of *Latinitas* Latin grammarians never use the Latin translation of ἀναλογία, i.e. *proportio*. Sometimes they use *analogia*, probably already deprived of its mathematical meaning. More often, the technical term disappears and they use a neutral term such as *ratio*, which can have an infinite number of meanings, all pointing to a necessity of rational order<sup>50</sup>. What is noticeable is that in this particular case *ratio* does not correspond to Greek λόγος, as λόγος is never found as a criterion of Ἑλληνισμός.

<sup>49</sup> While the four canons of *orthographia* were: ἐτυμολογία, ἀναλογία, διάλεκτος, ἱστορία. Cf. Siebenborn (1976: 54, 159-161).

<sup>50</sup> The usage of *ratio* in linguistic topics is very common in Latin authors and it would be an endless task to enumerate all the passages where we find *ratio* with this meaning. For example, Gellius uses *ratio* very often in his *Noctes Atticae* to mean a general rational rule in using the Latin language.



## 6. Conclusions

From the very beginning Latin authors tried to translate the concept of ἀναλογία. The first to do so was Staberius Eros, who chose the calque *proportio*. But the idea of *proportio* was too strictly linked with mathematics to suit the Latin scholars' concept of grammar, which was thought to be essentially different from the science of numbers.

Therefore, at a certain point, Latin grammarians preferred to go back to the original Greek word, transcribing it into the Latin alphabet. In this way they had just the idea of analogy as something related with the similarity in declensions, without any link to the original mathematical meaning<sup>51</sup>. This was in keeping with the Latin approach to grammar, conceived not so much as a τέχνη, but as a tool to learn the correct way of expressing meaning in Latin<sup>52</sup>.

Moreover, we have to notice that, while in Latin normative grammar, grammarians tend to use the loanword from Greek or at least the Latin calque *proportio*, when dealing with *Latinitas* they often prefer to use just Latin terms. Latin grammarians tend to avoid the term *analogia*, which is present only at the beginning of Latin scholarship, in Varro. Perhaps this is due to the fact that, by contrast with normative grammar, which was a real technical subject and where, therefore, a mathematical device was well accepted, in a more rhetorical subject such as *Latinitas*, Latin authors preferred to use a different, more common word. We can suppose that normative grammar was regarded as something inherited from Greek and therefore that Latin grammarians also wanted to use technical words borrowed from Greek. On the other hand, the question of *Latinitas* was perhaps regarded as something exclusively Latin and therefore grammarians had the feeling that they could use their own lexicon: *Latinitas tota nostra est*.

<sup>51</sup> Conclusive evidence of this re-semanticizing of the word *analogia* is to be found in Seneca. In *Ep.* 120, he uses this concept borrowed from grammar for his purposes: analogy becomes here a means of achieving morality, since in looking at moral examples we can try to imitate them: *Ep.* 120. 4: *per analogian nostri intellectum et honestum et bonum iudicant. Hoc uerbum cum Latini grammatici ciuitate donauerint, ego damnandum non puto, puto in ciuitatem suam redigendum. Utar ergo illo non tantum tamquam recepto, sed tamquam usitato*. "Our school of philosophy hold that the honourable and the good have been comprehended by analogy. Since the word 'analogy' has been admitted to citizen rank by Latin scholars, I do not think that it ought to be condemned, but I do think it should be brought into the citizenship which it can justly claim. I shall, therefore, make use of the word, not merely as admitted, but as established" (Gummere 1943: 383).

<sup>52</sup> On the "rhetorical" attitude of Latin grammarians, especially from the 4th cent. onwards, cf. Lindsay (1916).

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