Can't Aristotle's problemata exhibit ideological cant?

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ABSTRACT: The work we propose here is an argumentative study concerning the ancient Greek, as it was used in the time of Aristotle. We defend the idea that it is possible to carry out an empirical semantic study on ancient texts such as those of Aristotle, provided that a sufficiently large corpus is used (for example, all the known texts written in that language), and the rather fine knowledge which philosophers and, in this case, Hellenists have elaborated concerning the debates of ideas which permeated that epoch.

KEYWORDS: argumentation and ideology, argumentative ambiguity, ancient greek, use of argumentative analysis, authorship determination.

1. INTRODUCTION

This study also has a practical orientation: elaborate elements of a method allowing to provide evidence for or against the attribution, to an author, of a text whose origin can be considered doubtful. Here we focus on a text, the Problemata, which groups together a large number of arguments of its author(s) on various subjects, and whose attribution to Aristotle gives rise to some doubts.

We restrict the semantic study to the description of the Greek words ὀξύ (sharp, acute) and βαρύ (low, severe), in their different forms (nouns, adjectives to positive, comparative or superlative), as they appear in section XIX of that text. We show that these words introduce argumentative ambiguities, which can be discriminated using knowledge about the author's ideology at the time of writing. More generally, we will see that there is a link between the semantic properties of units of languages and the ideology of discourses which use them. On the basis of what we know of Aristotle's ideology, and taking into account the argumentative properties of some Problemata of Section XIX, we will explain how we can determine whether they can possibly be attributed in some way to Aristotle (or one of his close disciples), or if, on the contrary, they can certainly not be attributed to Aristotle.

2. PATERNITY PROBLEM FOR THE *PROBLEMATA*

Like the majority of the Problemata sections, the nineteenth section, with fifty problems, is not attributed to Aristotle. Nevertheless, according to the Hellenists Pierre Louis (1993) and Eichthal and Reinach (1892), it is probably the work of Aristotelian disciples

testifying with more or less fidelity of the thought of Stagirite in music, while other sections are, rather, attributed to other later authors.

We will show how the study of the occurrences and the form of the adjectives ὀξύ (*sharp, acute*) and βαρύ (*low, severe*), can give indications about the genesis of some of the *Problemata*. In order to achieve this goal, we will have to show that there is a general way of linking linguistic facts to the ideologies underlying the discourses exhibiting these facts. From what we know about Aristotle's ideology, we will determine whether or not, examining some of the linguistic facts appearing in a set of *Problemata* classified in section XIX, provides evidence for securely attributing those *Problemata* to Aristotle or one of his close disciples.

2.1. *A … globally Aristotelian… text*

The Hellenists consider that this section is written by Aristotelian disciples because it addresses the problem of music in terms recognized by tradition as Aristotelian. Indeed, we find here ideas close to (and often identical to) those of the philosopher, as well as his terminology. Nevertheless, it should be noted that we do not have a treatise on music on the part of Aristotle; at most, Book 8 of the *Politics* casts some ideas about the use of music for society, but nothing about what it is and how it is constructed.

Section XIX is what we have (even though indirectly) most accomplished on music from the philosopher. But it is also, and this is quite worthwhile, a testimony of a part of the Pythagorean ideas on music, as if, for this field almost exclusively, Aristotle did not find it useful to defeat the ideas of the Pythagorean philosophers, who, however, elsewhere and on other subjects, he used to fight.

As we will see, one of the formal characteristics which betray the Aristotelian (even indirect) origin of section XIX of the *Problemata* lies in the distribution of the positive or comparative form of the adjectives ὀξύ and βαρύ according to the context in which they are used.

2.2 *Comparatives and infinite*

Indeed, on the one hand, the adjectival form of the comparative or the superlative presupposes the possibility of considering in its gradual form the quality to which the adjective refers. The comparative form in -τερος means “more … than”, whereas the superlative form -τατος can be relative ("the most") or absolute ("very").

Now, admitting that a quality can be more or less strongly manifest in a phenomenon, prevents from recognizing a limit in the plus or minus: the presence of ὀξύ or βαρύ to the comparative or superlative form commits with taking into account the *more or less sharp* or *more or less low* unlimitedly. This is indeed how, according to the conclusions of Wersinger (2008), the Pythagoreans represented the infinite or the unlimited:

> Pour les pythagoriciens, *l’apeiron* est donc « le plus ou le moins ». Sans doute l’infinitésimale telle qu’ils la conçoivent est-elle encore rudimentaire. Il n’empêche qu’elle constitue pour eux une

représentation qui leur sert à reconnaître l'existence de l'infini en tant que différence évanouissante de deux grandeurs.[1] Wersinger (2008, p. 230)

On the other hand, we know that Aristotle, like other philosophers of Antiquity (but unlike the Pythagoreans), was reluctant to admit the existence of the infinite or the unlimited outside the field of mathematics. What is perfect is necessarily finite; infinity is not knowable, according to the Ancients.

It is known that, if Aristotle refused to believe in the physical infinity of the world, he did not deny mathematical infinity; he was aware of Zeno of Elea's paradoxes, since he relates them in *Physics* before examining them.

In examining these problems, Aristotle presents a fundamental distinction between *potential infinite* and *actual infinite* that, according to him, must now be established. *Potential infinity* is a construction of the mind, necessary for the resolution of certain problems falling within mathematics, but not assuming a correspondence with something of the world; while the *actual infinity* must really correspond to something existing. But for Aristotle, no *real* object is infinite.

In the entirety of the texts attributed to Aristotle, we do find adjectives expressed in the positive form, the comparative form and the superlative form. However, this does not contradict, in general, what we know about Aristotle: even though every expression in the comparative or the superlative could be considered as a warrant in favour of the idea of infinity, we know that Aristotle, anyway, does not question the existence of a potential infinity, necessary to the understanding of the problems in particular mathematical, or 'mathematizable'.

3. WHAT WE AIM AT AND WHAT WE CAN EXPECT

For several decades, discourses have been known to give indications on the ideologies of their authors: from Viktor Klemperer to *Speech Analysis*, many authors have examined this aspect of the language sciences with regard to many living languages. But to study the possible links between the texts that interest us and the ideologies that we think we know, we face a major obstacle: we want to study the traces of utterances in an ancient language, that is, by definition, a language for which we have no living speaker...

3.1. *Studying an ancient language using the tools of modern linguistics*

Since we have no living speaker to verify or falsify, through the consequences on their discourses, what we say about the Greek language of the fourth century AC and what we say about the ideologies of Aristotle and Aristoxenus. We will not be able to test our descriptive hypotheses in this way. However, this apparent disadvantage has a definite advantage: the fact that there is no speaker any longer implies that there has no longer been, for a long time, authentic production in that language: in other words, we have *all* the texts, traces of statements in the Greek language, which have been found to date:

[1] For the Pythagoreans, the *apeiron* is "the most or the least". No doubt the infinitesimal as they conceive it is still rudimentary. Nevertheless, it constitutes for them a representation which they use for recognizing the existence of the infinite as a vanishing difference of two magnitudes.

constituting a corpus is therefore particularly easy, since the crucial problem of the selection criteria no longer arises.

Our corpus consists, on the one hand, of the XIX section of the *Problemata* and on the other hand, the *Elements of Harmony* of Aristoxene; the other texts of contemporary Greek authors, translations and commentaries from the nineteenth to the twenty-first centuries will play the role of interlocutors or will, in any case, be used to test our assumptions. On the other hand, although we cannot test our hypotheses with real-life subjects, the body of Greek texts puts us in the presence of past speakers and, as long as we can identify their ways of seeing, we have an indirect means of refuting or confirming the hypotheses we are led to formulate in order to describe the meaning of the words of ancient Greek. In order to secure reasoned hypotheses on the past speakers' ways of seeing, two tracks can be explored: on the one hand, the detailed analysis of successive translations of the target text, and their motivations and; on the other hand, the written knowledge researchers have accumulated about the ideological, philosophical and scientific debates of the time. In this study, it is this last means that we explore: firstly, we expose a set of non-linguistic data concerning these debates, and organize them in such a way as to be able to formulate hypotheses, predictions and questions about the plausibility that such author supports or attacks such a position in these debates.

Of course, we will limit this exploration to data that will allow us to describe the meaning of βαρύ and ὀξύ, in order to understand the ideologies that their uses evoke. It is these results that will then enable us, as a kind of application of our study, to provide arguments for or against the attribution, to the presumed author, of texts whose origin is disputed.

3.2 *Using a fine-tuned semantic model in order to account for the ideological bias that explains a statistically measured textual property*

If the *Problemata* are indeed the work of Aristotle or his close disciples, and if there is a link between the linguistic fact and the ideology of discourse, then in section XIX, the fifteen or so problems that deal with ὀξύ or βαρύ should, in one way or another, reflect the acceptance of the *potential* infinity and the rejection of the *actual* infinite. In particular, we can expect that, in domains whose boundaries have not been clearly delimited, the grammatical form chosen for the adjectives ὀξύ and βαρύ reflects the Stagirite's will to block the penetration of infinity into the actual observable world. However, derogating from his own principles, Aristotle did not explain the external limits of the sound sub-domain of music: the refusal to use the comparative and superlative forms of these adjectives would allow Aristotle to partially compensate for this lack of limits and to continue to oppose the Pythagoreans by eliminating any possibility of expressing themselves in mathematical terms when talking about the sounds of music. In section XIX of the *Problemata*, out of 45 occurrences of ὀξύ or βαρύ, 11 are in the comparative or superlative form: we observe that these occurrences appear in passages where Aristotle speaks of the physics of the generation of sound, whereas, when he deals with the perception of sound, only positive forms are used. It seems, thus, that the total absence of comparatives and superlatives for these two adjectives should be explainable by some incompatibility between aspects of the meanings of those forms, and some biases with which the author's understands musical sound perception. In order to examine

that question, we will thus need a semantic framework in which meanings and biases are related: this is where the ViewPoint semantics comes in.

3.3 *Using philosophical and historical studies in order to justify the interest of a statistical disappearance*

The disappearance of comparative and superlative forms of ὀξύ and βαρύ a part of our corpus is all the more remarkable, because we encounter a greater share of ὀξύ or βαρύ occurrences in the comparative or superlative form in the writings of Aristotle's own disciple, Aristoxenus of Tarentum, who was a distinguished disciple of Aristotle (he would even have been tipped to succeed the master at the direction of the Lyceum, if the master had not, at the end, preferred his own son-in-law).

As a result, we can also wonder about this apparently paradoxical use of Aristoxenus of non-positive forms: a disciple of Aristotle, who is fiercely opposed to the Pythagorean doctrines too, shows no reluctance to use comparative and superlative forms for adjectives ὀξύ or βαρύ. Whereas, as we have seen, Aristotle would avoid using these forms whenever they could contribute to strengthening the Pythagorean ideas, and, for that matter, the possibility of infinity for actual objects.

To feed our interrogation tracks, note that Wersinger (2008) is surprised to note that in Plato's *Philebus*, unlike *Parmenides* and *Sophist*, the form of the adjectives βαρύ and ὀξύ is always positive.

> La disparition du comparatif qui caractérise les relatifs relevant de *l'apeiron* [l'illimité] (comme « le plus aigu » par rapport au « plus grave »), au profit des adjectifs simples (comme « l'aigu » et « le grave ») témoigne d'un glissement qui pose problème. Le grec ancien établit une distinction claire entre la forme grammaticale qui énonce les relatifs par les comparatifs et celle qui les absolutise.[2]
>
> Wersinger (2008, p. 251)

We derive at least two pieces of information from this passage: we consolidate our hypothesis that the comparative or superlative grammatical form has to do with the infinite, or the *apeiron* (the unlimited); we find that this 'slippage' is considered "problematic" by Wersinger. A few pages later, she explains this disappearance of comparative forms by the fact that the text is about "low pitched" and "high pitched" sounds, that is to say, concerns belonging to music, area in which ὀξύ and βαρύ play a limiting role (on which we will have the opportunity to return).

These remarks justify thus our questioning about the use of the grammatical forms of these two adjectives in a musical context: the words βαρύ and ὀξύ, used to refer to *low pitched* and *high pitched sound*, are often presented as at the heart of the issues related to music and mathematics. According to their grammatical form, did they bear the mark of the infinite or *apeiron* or, on the contrary, were they perceived as limiting?

And, since Aristotle, in *Problemata* XIX, uses several forms of the adjectives βαρύ and ὀξύ, it is necessary to ask whether, in some cases, he follows a Platonic way of

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[2] The disappearance of the comparative, that characterizes the relatives pertaining to the *apeiron* [the unlimited] (like "the sharpest" compared to the "lower"), in favor of simple adjectives (such as "sharp" and "low") shows a problematic shift. Ancient Greek makes a clear distinction between the grammatical form which states the relatives by the comparatives and the one which absolutize them.

proceeding and, in other cases, he eliminates the very idea of *apeiron* conveyed by the comparative and superlative forms of the adjectives.

From her part, Wersinger comes to the conclusion that, if Plato's position is ambiguous, that of Aristotle leaves no doubt.

> On constate qu'Aristote rigidifie ce que Platon ne semblait qu'effleurer : un intervalle liminaire délimite un domaine. Alors que Platon affirme à la fois que l'intervalle est un infini et un limitant, comme en témoigne l'exemple de l'aigu et du grave, qui sont infinis et qui pourtant délimitent le domaine musical, Aristote refuse cette ambivalence ou cette ambiguïté et tranche en faveur de la limite. […] Par rapport à Platon, cela revient à déclarer qu'il n'existe pas d'intervalle non borné.[3] Wersinger (2008, p. 264)

Our next step is trying to understand more precisely in which cases, and for what reasons, Aristotle would use, sometimes the comparative form sometimes the positive form of these adjectives.

Aristoxenus, although disciple of Aristotle, seems to tame the idea of infinity by taking care to clearly delimit the space or the place subjected to his study of acoustic and musical phenomena, thus returning the notions of infinity or unlimited to the mathematicians heirs of Pythagoras while he faithfully follows the Aristotelian method by the very constituency of the area to be studied.

Wersinger (2008), insists that, (i) most probably, much of what we know about the Pythagoreans actually comes from the Platonists, who contributed greatly to founding the Pythagorean legend; and (ii) Aristotle, especially in the Metaphysics, is one of our best informers about the Pythagorean doctrines. Thus, Wersinger argues that:

> […] on a pu établir que seul le témoignage d'Aristote semble digne de foi et qu'il convient de comparer à ce témoignage les fragments qui nous restent. Pourtant Aristote n'est pas toujours un témoin sûr, […]. Il ne rapporte pas fidèlement la pensée pythagoricienne mais en traduit la portée relativement à sa propre pensée.[4] Wersinger (2008, p. 205)

With this remark in mind, we can expect to find elements of Pythagorean thought through what Aristotle and Aristoxenus say about it, in comparison with their own thought. It may not help us to draw the exact outlines of Pythagorean thought, but that is not the goal we pursue. Indeed, we do not seek to understand Pythagoras through Aristotle, but only if the use of adjective degrees in *Problemata* section XIX can be mapped to what we know about Aristotle's ideology. With that purpose, we will explore the possibility of a link between linguistic facts and the ideology of Aristotle, exploration that supposes, more generally, the possibility of establishing a relationship between a linguistic fact, and statistical measures, and what we know about the thought of the author of the linguistic segment which exhibits the observed fact.

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[3] We can see that Aristotle rigidifies what Plato only seemed to scratch: an interval delimits a domain. While Plato affirms at the same time that the interval is infinite and limited, as is evidenced by the example of *treble* and *bass*, which are infinite and yet delimit the musical domain, Aristotle rejects this ambivalence or ambiguity, and chooses in favour of the limit. [...] In relation to Plato, this amounts to declaring that there is no actual unbounded (open) interval.

[4] [...] it has been defended that only the testimony of Aristotle seems worthy of faith and that it is convenient to compare to this testimony the fragments that remain to us. Yet Aristotle is not always a reliable witness […]. He does not faithfully report Pythagorean thought, but translates its significance to his own thought.

4. NON LINGUISTIC DATA

The opposition categories of ὀξύ and βαρύ are controversial…

The opposites of the type ὀξύ and βαρύ are, for the ancient Greeks, the first elements that can be enumerated and whose systematic opposition fascinated the ancients. These pairs of oppositions work (even now) as instruments of knowledge and seem reassuring because they are binary –no doubt they respond to a certain functioning of our thought. The next three sub-sections sketch an explanation of how the lists of oppositions used to work as an instrument of knowledge in the Greece of Antiquity.

4.1 *The use of* Sustoichiai *as an instrument of knowledge*

This process, which leads to knowledge through the opposites, favours the emergence of analogies, and particularly analogies of structures, which allow, among other things, an early, abstract description of the phenomena of the world. Thus were born the first descriptions of acoustic and harmonic phenomena, which the Pythagoreans and their followers described in largely mathematical terms.

Aristotle names συστοιχία (*sustoichia*) the list or table of opposites. He notes that this list is not disordered or unfounded: its construction obeys a set of rules that it brings to light; these opposites are coordinated and hierarchical.

Limited and unlimited	Rest and movement
Odd and even	Straight and curve
One and several	Light and dark
Right and left	Good and bad
Male and female	Square and oblong

Table 1: The Pythagoreans' Ten principles
(from Aristotle, Métaphysics 986a22-34)

The pairs of opposites established in this list are widely used by Aristotle in many of his works, when he undertakes to produce a complete description of a phenomenon he observes. He goes so far as to explain Nature by the obligatory observation of the opposites, without hesitating to artificially sneak his ideology. For example, noting that the heart is on the left side of the body, while this important organ, in his representation, should be on the right, he explains it by emphasizing that it must be so in order to compensate for the obviously natural coldness of the left side. (Aristotle, First analytics, 665a22 and following).

4.2 *Analogy and pairs of opposites: two complementary paths*

In the Greek thinkers of Antiquity, thus, we find a fascination for these pairs of opposites, and more generally for a system of almost automatic derivation of these opposites, a kind of declination by analogy, which would make it possible to cover the whole of the real world by this type of descriptions, which can be considered as a kind of abstract formalism.

Legend has it that Pythagoras, strolling through the busy streets, noticed that the sound of the anvils produced more or less high notes, sometimes consonant when the receptacles on which they were struck were, as to their volume, in a proportion ratio easily formalisable into simple fractions. What was his surprise when he noticed that the fractions were the same as those that could be observed on a monochord –a string stretched over a wooden body with resonance: the upper fifth of the sound produced by striking the full length of the string is obtained by striking 2/3 of its length; the upper fifth of the sound produced by striking a hollow and resonant object will be obtained by striking an object with identical shape, dimensioned to the 2/3 scale. The Pythagoreans like the other physicists of their time (and of the times that followed) tried to abstract from an observed experiment what could be duplicated on another.

We see, then, two closely related paths of knowledge: one pursuing the laws of proportion from [A is to B what C is to D], the other the laws governing opposites from [A is to B what -A is to –B] (where "-X" refers to the opposite of "X" in the list of opposites). Each of these paths has to do with analogy and abduction in its most elementary form, in that we extract from these observations a general rule which is said to constitute the rector principle of the phenomena of the world.

Note that the seduction exerted by couples of opposites on humans does not concern only the Greeks or even only the Westerners; it is also a peculiar characteristic of Eastern philosophies and religions, like Taoism with Yin and Yang; or, geographically closer, but more distant in time, Zoroastrianism and its simplified form, Manichaeism.

4.3. *Three types of oppositions*

The pairs of opposites in Aristotle, whether they are predicates or concepts, if they reflect the real phenomena, do so only because, moreover, they play the role of limits of the domain they allow to approach. To account for this, we propose to distinguish three types of opposites: opposites *with respect to their orientation*, opposites *in their domain*, and opposites *as concepts*.

Opposites as to their orientation concern qualities that can be attributed to objects of the world; they could be represented at each side of a geometric line on which, for example, the more (or less) hot or the more (or less) cold would degrade. This virtual representation in the form of a graduated geometric line can be abstract enough (from the Aristotelian real world) to run to infinity in one direction or the other: there will always be higher, warmer ... at least can we imagine it as far as mathematical infinity allows us. Some so-called *opposite predicates* may even designate the same absolute value according to the degree they display: *less cold than yesterday* at 12° C may denote the same as *warmer than tomorrow*, still at 12°C. Opposites within this category of *opposite-oriented predicate*, allow thus a certain superimposition of the values of the predicates according to the context as well as a graduation to infinity; it is of course possible, later, depending on the object that one wishes to describe using these predicates, to determine a limit or graduation beyond which the object changes in nature. In any case, this type of oppositions makes it possible to determine open intervals (that is, either infinite or whose bounds are excluded). In such a context, + hot or + cold will be *opposed as to their orientation*. Diagram 1 illustrates this configuration:

Diagram 1 : *Opposed with respect to their orientation*

Opposites *in their domain* also concern qualities of objects of the world; they can be represented as two subspaces constituting a partition of an observed material space. They correspond to a gradual conceptual space, but the partition into two subspaces makes it possible not to take into account the gradualness of the domain. Thus, *hot* and *cold*, for instance, can be seen as two complementary sub-spaces of the space of (liquid) water temperature. This category of opposites does not allow the superposition of the predicates and limits the material domain considered: this type of oppositions makes it possible to determine closed intervals (that is to say finite and containing their limits). Diagram 2 illustrates this configuration:

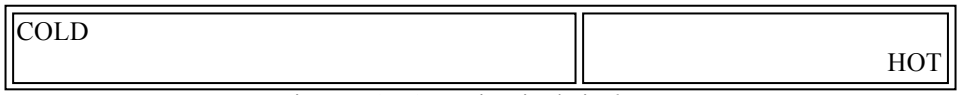

Diagram 2 : Opposites in their *domain*

Opposites *as concepts* are distinguished from the previous two in that they only concern conceptual domains, do not constitute a partition of the domain, and do not concern a gradual domain. Thus, for example, the *open-closed* opposition determines neither the bounds nor the content of a material space. An object or a phenomenon of the real world cannot be said *more or less open* or *more or less closed*. *Open* and *closed* are logically opposed. One thing is either *open*, or *closed*.

Be they perceived as (1) opposed orientations (+ vs -), (2) opposed domains (hot vs. cold, sharp vs. low) or (3) opposed concepts (open vs closed), these opposites help to determine the nature of the phenomena that will be discussed –and not the opposite: indeed, when I speak of the opposition *the hot* vs *the cold*, I do not speak of the same phenomenon that would be describable with the help of ± *ho*t and ± *cold*.

The so-called Pythagorean list of the ten opposites contains undeniable *conceptual* opposites: *the odd* and *the even*, *the one* and *the multiple*, *the rest* and *the movement*, *the square* and *the oblong*, *the male* and *the female*, *the rectilinear* and *the flexed*. It is more difficult to imagine that opposites such as *light* and *darkness*, *right* and *wrong*, *left* and *right* have no relative graduations. In our present representations, there is *more or less good*, *more or less right or left* and *more or less enlightened*. These opposites are formed of two qualities relative to each other. We can imagine a momentary shift of these representations into a more fixed and absolute form, which would then make these opposites belong to the category *as to the domain*. The essential question, one will guess, is to know what type of pairs of opposites the opposition between βαρύ and ὀξύ belongs to, according to our different authors.

5 THE VIEWPOINT SEMANTICS AND ITS USE TO ANSWER OUR QUESTIONS

We join the Ducrotians (see, for example Ducrot 1984), but also many other linguists, semioticians or discourse analysts (see, for example, Ouellet et al., 1994:137), in defending that semantic phenomena and, for that matter, opposites in the language, do not

–*cannot*– inform directly about the world; nevertheless, they make it possible to understand how the speakers' and the hearers' way of apprehending the world is conditioned by the semantic properties of their language (see also Raccah 2015).

In order to do so, one must be able to follow the threads linking the semantic structure of the languages under study with the process through which speakers and hearers construct utterance meanings by way of applying sentence meanings to their perception of the world (subjective situation). Obviously, a semantic model based on a 'transmissional' conception of linguistic communication cannot help achieve such an enterprise: we now present a conception of communication that accounts for the fact that utterance meanings are not transmitted by the speaker but rather constructed by the hearer, and a semantic model based on that conception of communication, and that accounts for the fact that semantic phenomena do not inform about the world, but about the way speakers and hearers apprehend the world (cf. Raccah 2014).

5.1 *Linguistic communication and instructional semantics*

It has been shown, in many different ways, that communication using a (human) language is not about sending messages, but (roughly speaking) about manipulating people in order for them to construct the meaning one wants them to construct (this will be 'unroughed' in a while…). We will not reproduce the relevant demonstrations here, though it might certainly be useful, for the 'message transmission' conception is still taught, in most universities around the world, as the 'good sense' conception (if not the only one). However, in order to understand instructional semantics, it might be useful to, first, have a look at an alternative to the 'transmissional' conception, alternative that can be considered to be the background of the various instructional semantics.

Since nothing *really* goes from the speaker's mind to the hearer's mind, the transmissional conception of communication is but a metaphor of –successful– communication and, as such, cannot be used for scientific purposes. The impression that communication is about transmitting messages comes from the fact that, when both speaker and hearer are glad after a communication session, both the speaker (who also is a hearer for himself) and the hearer have the impression that the speaker had a message and that, thanks to that communication session, this message is now common to both the speaker and the hearer. Now, this impression can be produced by a much less metaphorical process: (i) the speaker wants the hearer to do something or to be in a specific disposition with respect to some subject; (ii) the speaker says something to the hearer in order to act on him/her towards that goal; (iii) if the communication session succeeds, [a] both speaker and hearer will have constructed a meaning for what the speaker said, [b] both have the impression that the two meanings constructed are the same, and [c] both have the impression that the goal aimed at by the speaker is achieved or will be shortly achieved. With such a conception of communication, successful communication does look like the transmission of a message (with the difference that this message did not pre-exist the communication session), and we can understand several ways in which communication can fail. This conception of communication, call it "manipulatory" (without *necessarily* retaining the negative connotations of that word…), is a sort of pre-requisite for the different *instructional* semantics.

The *manipulatory conception of communication* (MCC) is not a model since it does not specify what makes people build utterance meanings, nor how. A step towards modelling *communication using language* is done by *instructional semantics* (IS): it specifies that human languages abstract units provide instructions on building meaning for their utterances out of one's knowledge and beliefs. These instructions are independent of the situations: they are acquired during the language acquisition process and their application by speakers-hearers, in situations, escapes the control of their conscience: *it is not possible not to understand an utterance that we are able to understand*. IS specifies that the semantic instructions must be such that they allow/force to act on speakers-hearers' representations of situations, in order to build the utterance meaning. However, IS does not specify the nature of these instructions, what aspects of representations are concerned, nor how they act; these specifications depend on the models that will be chosen, and IS is a sort of meta-model, which allows for different models.

5.2 *Instructions on points of view*

ViewPoint Semantics (VPS) is an instructional semantics (IS) which postulates that constraints on points of view are necessary and sufficient to account for the linguistic instructions for meaning construction. It follows from this position that, for VPS, constraints on points of view are the basic 'ingredients' of sentence meaning.

Within this theoretical framework, it has been shown that points of view:

- determine argumentative orientations
- characterize polyphonic voices
- participate in determining reference in situations

In addition, the ideology of a discourse is characterized by presupposed points of view. This will greatly interest us here; we insist that such a characterization of ideologies (the points of view one must admit in order to understand an utterance or a discourse) is not ideological: not all ideologies are evil…

Semantic descriptions using VPS involve, thus, constraints on points of view, some of which are directly asserted, others being presupposed: the ones that reflect ideological commitments. We saw that, using ὀξύ or βαρύ in the comparative or the superlative form commits to consider them as *opposites of the apeiron*, that is, to place them in an open interval, from which one should infer the possibility of actual infinity. Now, this is precisely the kind of commitments Aristotle would not accept.

6. CONCLUSION

As far as our subject is concerned, we have pointed out that ὀξύ and βαρύ, though often presented in the opposites of the *apeiron* (opposites *with respect to their orientation*), that is to say those carrying in the language the excess and the defect expressed by the comparative and superlative forms, they become opposites *in their domain* in Plato's *Philebus* and in most of the section XIX of Aristotle's *Problemata*, while they become again generally opposed *with respect to their orientation* in Aristoxenus' *Elements of Harmony*. The ideological filter produced by this move is systematic and compatible with Aristotle's point of view on infinity: the text of

Problemeta XIX is thus probably written by Aristotle or one of his close disciples. In order to give that answer, we had to combine the efforts of historians and philosophers with a semantic description of Ancient Greek which put in light the points of view and ideologies that permeate discourses in human languages.

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