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# **Linguistic Meaning is Gradual and Approximate even when Common Sense Denotation is not**

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## ***FIRST DRAFT***

Please do not quote  
Remarks and comments are welcome

### **General outline**

1. From the *Sinn* / *Bedeutung* distinction to the *utterance meaning* / *linguistic meaning* distinction: an *instructional* approach to semantics
2. Proofs of the graduality of sentence meaning
3. Empiricity and scientificity of semantics
4. Why constraints on argumentation ought to be *specifically* accounted for in a scientific empirical theory of sentence meaning
5. From argumentation to *points of view*
6. More about *topical fields*
7. An application to a linguistic description of metaphors  
(*to be written in form of conclusion*)

### **1. From the *Sinn* / *Bedeutung* distinction to the *utterance meaning* / *linguistic meaning* distinction: an *instructional* approach**

Two important distinctions historically shaped the contemporary conception of linguistic meaning: the first one, owed to Gottlob Frege's work, differentiates meaning (*Sinn*) from denotation (*Bedeutung*), while the second one, essentially due to the work initiated by Émile Benveniste, separates the semantic value of an utterance (usually called its *sens*, in French) from that of the linguistic form used for that utterance (its *signification*). In both cases, one of the important tasks that were undertaken was to explicate the complex relationship between the two concepts that were differentiated: the way *Sinn* and *Bedeutung* are interrelated, and the way *sens* and *signification* are interconnected.

The need to distinguish *Sinn* from *Bedeutung* stems from the possible differences between the speaker's and the hearer's knowledge and beliefs about how the world is: the now famous example of the *morning star* / *evening star* sentences illustrates this necessity. Even for a hearer who knows that the references of the two noun phrases are identical, the phrases are not interchangeable in all discourses; in particular, a speaker who says "Max does not know that the evening star is the same planet as the morning star" obviously does not say the same as "Max does not know that Venus is the same planet as Venus"... Many other pieces have been added to this 'file', from different perspectives, leading to the idea that reference, through natural language utterances, is only indirectly obtained, through what Frege called

“die Art des Gegebenseins” (“the mode of presentation of the denoted object”, or « *le mode de donation de l'objet [dénové]* »)<sup>1</sup>. Immediately after introducing this distinction, Frege introduces an additional distinction between *Sinn*, which is public and largely shared among a speaking community, and *Vorstellung*, which is private and, as Frege puts it, essentially subjective:

Wenn die Bedeutung eines Zeichens ein sinnlich wahrnehmbarer Gegenstand ist, so ist meine Vorstellung davon ein aus Erinnerungen von Sinneseindrücken, die ich gehabt habe, und von Tätigkeiten, inneren sowohl wie äußeren, die ich ausgeübt habe, entstandenes inneres Bild (3). Dieses ist oft mit Gefühlen getränkt; [...]. Nicht immer ist, auch bei demselben Menschen, dieselbe Vorstellung mit demselben Sinne verbunden. Die Vorstellung ist subjektiv: die Vorstellung des einen ist nicht die des anderen.<sup>2</sup>

In this text, Frege takes for granted that, in contrast with *Vorstellung*<sup>3</sup>, *Sinn* can be “a common property of several individuals”, and excludes it from the “individual mode”, without any reason other than the authority argument which concludes the preceding paragraph:

Die Vorstellung unterscheidet sich dadurch wesentlich von dem Sinne eines Zeichens, welcher gemeinsames Eigentum von vielen sein kann und also nicht Teil oder Modus der Einzelseele ist; denn man wird wohl nicht leugnen können, daß die Menschheit einen gemeinsamen Schatz von Gedanken hat, den sie von einem Geschlechte auf das andere überträgt<sup>4</sup>.

Though there is no *a priori* reason to put in doubt the intuitions of such an important thinker, it seems that, oddly enough, Frege did not wonder *how* private representations, biased with all the subjectivity of the ‘individual mode’, could result in a perfectly objective common treasure which can be transmitted from generation to generation. I do not have, of course, the pretension to give an answer to that difficult question, dramatically hidden by strongly rooted popular beliefs... I do offer a thread, however, to avoid that question while studying linguistic semantics: if this thread is strong enough, what ‘universalizes’ those ‘private experiences’ is language itself, and there is no need to suppose that *Sinn* is objective in order to justify the study of the constraints human languages impose on it. What has to be objective is the set of those constraints; an important reason which forces to admit this objectivity is the fact that any idiot can acquire these constraints in less than 24 months, without any sort of training...

Obviously, if I remove *objectivity* from *Sinn*, I am no longer entitled to call the result “*Sinn*”: fair enough, I suggest that we call the resulting concept “*utterance meaning*” (French: *sens*, Spanish: *sentido*, Italian: *senso*)<sup>5</sup>. Similarly, the set of constraints that any human being acquires so easily, though objective, and in spite of the fact that it can be seen as an *Art des*

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<sup>1</sup> Frege (1892), p. 26 ; French translation : Imbert (1971), p. 102.

<sup>2</sup> Frege (1892), p. 29. The French translation (Imbert, 1971, p. 105) gives: « Si un signe dénote un objet perceptible au moyen des sens, ma représentation est un tableau intérieur, formé du souvenir des impressions sensibles et des actions externes ou internes auxquelles je me suis livré. Dans ce tableau, les sentiments pénètrent les représentations ; [...]. Chez le même individu, la même représentation n'est pas toujours liée au même sens. Car la représentation est subjective ; celle de l'un n'est pas celle de l'autre. »

<sup>3</sup> Several dictionaries concord in giving: “idea”, “picture”, “imagination”, “representation”, “presentation”, “performance” for this German word, according to the context in which it is used.

<sup>4</sup> Frege (1892), p. 29. The French translation (Imbert, 1971, pp. 105-106) gives: « C'est par là qu'une représentation se distingue essentiellement du sens d'un signe. Celui-ci peut être la propriété commune de plusieurs individus : il n'est donc pas partie ou mode de l'âme individuelle. Car on ne pourra pas nier que l'humanité possède un trésor commun de pensées qui se transmet d'une génération à l'autre ».

<sup>5</sup> As far as I know, the first explicit presentation of the conceptual difference between *utterance meaning* and *sentence meaning* is due to Dascal (1983).

*Gegebenseins* (a way of ), cannot be called “*Sinn*” either, because it lacks the, so to speak, ‘picturality’ attached to the original concept: fair enough, again, I suggest that we call this set of constraints “*sentence meaning*”, “*phrase meaning*”, or else “*linguistic meaning*” (French: *signification*, Spanish: *significado*, Italian: *significato*).

The notion of *linguistic meaning* is thus positioned somewhere between *Sinn* and *signification*; it relies on the observation that linguistic units (simple or complex) are partly (and only partly) responsible for the way their utterances are understood. In most of the work acknowledging both distinctions, that ‘responsibility’ is taken to be a set of *instructions* or *constraints* that each sign of a given human language imposes on the way one has to build the understanding of the utterances which contains it (its *utterance meaning*), out of what (s)he considers to be the relevant elements of the situation.

Semantics can thus be conceived of as the discipline which empirically and scientifically studies the contribution of language units (simple or complex) to the construction of the meanings of their utterances in each situation. The contribution of the situations to the construction of utterance-meanings is studied, according to that conception, by pragmatics. We will see, in a few paragraphs, why this conception of semantics is to be preferred to the simple classical intuitive “science of meaning”: this paper can be seen as an exploration of several consequences of this conception of semantics.

According to that conception of semantics, *utterance-meaning* is, clearly, the result of a construction achieved by some hearer, construction influenced by the *linguistic meaning* (*sentence-meaning*, *phrase-meaning*) of the language units used in the utterance and by the elements of situation taken into account by the hearer. The following diagram illustrates this conception:

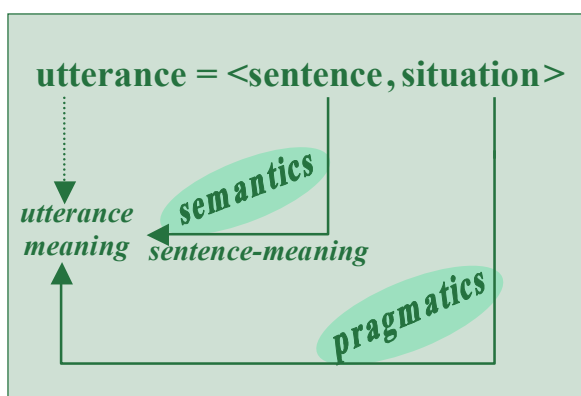


Diagram 1: contributions to utterance meaning

This pre-theoretic way of understanding the canvas of utterance-meaning construction belongs to the *instructional semantics* trend, as presented, for instance, in Harder (1990):

“the emphasis is on meaning as something the speaker tells the addressee to do. If A (the addressee) does as he is told (follows the instructions), he will work out the interpretation that is the product of an act of communication”<sup>6</sup>.

The conceptual distinction between *utterance-meaning* and *sentence-meaning* might look, at first glance, similar to Frege’s distinction between *Sinn* and *Bedeutung*, but that first glance similarity is incorrect: Frege did not have (or did not use) the distinction between *utterance* and *sentence*, and both his *Sinn* and his *Bedeutung* were attributed to language units though they were, in fact, aspects of utterance-meaning<sup>7</sup>. In contrast, from the instructional semantics

<sup>6</sup> Harder (1990), p. 41.

<sup>7</sup> If the reader had any doubt about this last point, (s)he might wonder how reference (*Bedeutung*) can be computed for a *natural* language sentence without it being uttered in a situation. When speaking of formal languages, it may be argued that

point of view, utterance meaning is not attributed to language units, but is the result of an intellectual process and, as we will see shortly, in addition to be non objective, is anything but objectively observable.

## 2. Proofs of the graduality of sentence meaning

From that *instructional* conception of linguistic meaning, it follows that, even when a word or a phrase of a human language *can* be used in utterances understood as referring to a very precise entity (say, for instance, a geometrical object), the same word or phrase is necessarily also usable in utterances understood as vaguely referring to approximate entities (for instance, the approximate shape of that geometrical object). The proof goes in two steps.

- (i) Language units do not directly refer to entities outside language, but each of their use triggers a process at the end of which, in each situation, a reference may (or may not) be found; for each language unit, there must therefore be an undetermined number of possible external entities which could be reached by this process. Now, if each possible reference of a language unit *X* were precise (i.e. not approximate), the use of *X* could be understood only in situations where it could refer to an already planned external entity: this is, obviously, not the case, and, *modus tollendo tollens*, all possible references of a language unit is approximate.
- (ii) In some special purpose uses of language, when the discourse concerns rigorously defined entities, some language units may be such that there exists, within the domain of that use of language, exactly one rigorously defined entity which may constitute the reference of that special purpose use of language (the language unit is then a *technical term*). In the cases in which this language unit may also be used in non rigorously defined situations, the appropriateness of such a ‘derived’ use can be measured according to the proximity of the intended reference with respect to the rigorously defined case. For instance, the noun “rectangle”, when speaking of geometrical entities always refers to the same rigorously defined entity. The same (?) word, “rectangle” happens to be also usable when speaking of, say, plastic pieces of a construction game; however, none of the plastic pieces, obviously, possesses the geometrical properties of what is referred to by “rectangle” in geometry: it is the proximity between the shape of the plastic piece and the geometrical rectangle that allows such a ‘derived’ use. Moreover, if the ‘derived’ use is acceptable when the shape of the plastic piece is ‘close’ to a geometrical rectangle, the less the shape meets the geometrical requirements, the less the use of “rectangle” to refer to it is understandable. Hence the necessary graduality of linguistic meaning.

It is interesting to note that when a natural language expression has to be taken in a strictly non approximate sense, there must be non linguistic hints for the hearer to understand that the reference will be unique and rigorously defined: what ‘instructs’ the hearers to point to a precise entity, when they do, is taken from the situation, not from the linguistic meaning.

The conceptual flavour of this proof might seem suspicious to several hearers/readers; moreover, it is valid under the assumption that the ‘instructional’ conception of meaning is adopted and the surprising nature of what is proven (call it *P*) under that assumption could be taken (in a sort of weakened *modus tollendo tollens* argument) as a reason to reject the assumption. However, it is easy to realize that, as a matter of fact, *P* is what empirically *is* the case: independently from the ‘instructional’ approach on which the conceptual proof rests, the example of the word “rectangle”, as we have seen, proves that at least one language unit which has a precise reference in rigorously defined situations, has an approximate reference in

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all situations are considered equivalent: in that case, reference in one situation is the same in all situations, and it makes sense to speak of reference for the sentence itself. But this argument only works for formal languages and not for natural languages.

non rigorously defined situations and that, moreover, the process which allows to reach that reference is gradual. It is easy (and clearly unnecessary...) to test all of the English words that may refer, in some situations, to rigorously defined entities, and check that outside these situations, the reference of these English words is approximate and the process to reach it gradual.

The ‘suspicious’ proof turns out, thus, to be welcome, and the ‘instructional’ conception of meaning resists this rejection attempt, which reinforces its credibility.

### 3. Empiricity and scientificity of semantics

This whole story would be a simple curiosity without an empirical scientific framework which accounted for this particularity, in addition to the other semantic facts that can be observed. In the sequel, I will sketch such a framework, taking inspiration from recent (and less recent) publications on the *Semantics of Viewpoints*.

#### 3.1. What are the observable phenomena of natural language semantics?

In Racciah (2005), I showed that an essential scientificity requirement, valid for any kind of science, is that it should provide descriptions of a class of phenomena, in such a way that the descriptions of some of those phenomena provided *de dicto* explanations for the descriptions of other ones. I also pointed out that fulfilling empiricity requirements could not lead to believe that science describes the phenomena ‘the way they are’, since one cannot seriously believe that there is a possibility, for any human being, to *know* the way things are. Though scientific observers cannot prevail themselves of *knowing* how the world *is*, they have access to the world through their interpretation of the states of their sensorial apparatus. We also saw that that interpretation often relies on previously admitted scientific –or non scientific– theories.

If we want to apply these requirements to semantic theories, we have to find observable semantic facts, which can be accessed to through our senses. It seems that we are faced with a big difficulty, which might force us to admit that there cannot be such a thing as an empirical semantic theory: semantic facts are not accessible to our sensorial apparatus. Even if we take into account the distinction between *utterance-meaning* and *sentence-meaning*, none of them is directly accessible to our senses. We are thus in a situation in which the very object about which we want to construct an empirical science prevents its study from being an empirical study...

However, if we admit that physics is a good example of empirical sciences, we should realise that we are not in such a dramatic situation. For what the physicist can observe through her/his senses, say, the actual movements of the pendulum (s)he just built, is not what her/his theory is about (in that case, the virtual movements of *any* –existing or non existing– pendulum) the object of physical theories is not more directly accessible to the observers’ sensorial apparatus than the object of semantic theories. Physicists use different tricks in order to overcome that difficulty, one of which is the use of *indirect observation*: some directly observable<sup>8</sup> objects or events are considered to be traces of non directly observable ones, which, in some cases, are seen as one of their causes, and, in other cases, as one of their effects.

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<sup>8</sup> Though I have shown (*ibid.*) that nothing can be *directly observable* by a human being (since anything requires the interpretation of the state of our sensorial apparatus), I will use that expression to refer to objects or events whose access is granted by the interpretation of the effect they directly produce on our sensorial apparatus. This terminological sloppiness is introduced for the sake of legibility...

If we are willing to keep considering physics as an empirical science, we are bound to consider that that *indirect observation* strategy is not misleading; we only have to see how it could be applied to the study of meaning. In order to illustrate how this could be done, I will examine an example and will abstract from it.

Suppose an extra-terrestrial intelligence, ETI, wanted to study the semantics of English and, for that purpose, decided to observe speech situations. Suppose ETI hides in a room where several – supposedly English speaking – human beings are gathered, a classroom, for instance. Suppose now that ETI perceives that John pronounces “It is cold in here”. If all of ETI’s observations are of that kind, there is no chance that it can formulate grounded hypotheses about the meaning of the sequence it heard. For what can be perceived of John’s utterance is only a series of vibrations, which, in themselves, do not give cues of any kind as to what it can mean (except for those who understand English and interpret the utterance using their private know-how). If ETI wants to do its job correctly, it will have to use, in addition, observations of another kind. Intentional states are ruled out since they are not directly accessible to the observers’ sensorial apparatus. It follows that we will have to reject any statement of the kind: “the speaker meant so and so”, or “normally when someone says XYZ, he or she wants to convey this or that idea” or even “I, observer, interpret XYZ in such and such a way and therefore, *that* is the meaning of XYZ”. ETI will have to observe the audience’s behaviour and see whether, in that behaviour, it can find a plausible *effect* of John’s utterance: it will have to use indirect observation. The fact that it may be the case that no observable reaction followed John’s utterance does not constitute an objection to the indirect observation method: it would simply mean that ETI would have to plan other experiments. After all, even in physics, many experiments do not inform the theorists until they find the experimental constraints that work.

Before we go further, it is useful to emphasise that we have just seen that the different ‘popular learned conceptions’<sup>9</sup> of semantics are wrong. Indeed, the observable phenomena of semantics (i) cannot be directly meanings, since these are not accessible to our sensorial apparatus; (ii) they are not just utterances, since that would not be enough to describe meaning phenomena; (iii) they are not pairs consisting of utterances and ‘intended meanings’, since such intentional things are not accessible to empirical observation. In our extra-terrestrial example, we suggested that they are pairs consisting of utterances and behaviours.

In the rest of this paper, I will take that suggestion as seriously as possible: in this section, I examine how to constrain the relationship between utterances and behaviours, and sketch some of the consequences of this choice. In particular, I show why (and in what sense) linguistic meaning is gradual. In the following sections, I present elements of a theoretical framework based on the conception of meaning that follows from that discussion.

### **3.2. Three pre-theoretical hypotheses which characterise contemporary occidental rationality.**

#### *The causal attribution hypothesis*

Suppose that, in our example, ETI notices that, after John’s utterance, the following three actions take place: (i) Peter scratches his head, (ii) Paul closes the window and (iii) Mary writes something on a piece of paper. We all know (actually, we think we know, but we only believe...) that the correct answer to the question “what action was caused by John’s utterance?” is “Paul’s”. However, ETI has no grounds to *know* it and, in addition, it may be

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<sup>9</sup> That is, the conception an educated person could have about semantics without having learnt and reflected about it previously... This is, it must be admitted, the conception held by many people who speak or write about language!

the case that Paul closed the window not because of John's utterance (which he may even not have heard), but because *he* was cold, or because there was too much noise outside to hear what John was saying... Obviously, the most plausible hypothesis, in normal situations, is the one according to which Paul's action was caused by John's utterance; but the fact that it is plausible does not make it cease to be a hypothesis...

Thus, before ETI can continue its study, it must admit the following general hypothesis

H<sub>0</sub> Utterances may cause behaviours

Moreover, in each experimental situation *s*, ETI must make specific hypotheses *h<sub>s</sub>* which particularise H<sub>0</sub> in the situation *s*, and relate particular actions with the utterance under study.

It is important to remind that H<sub>0</sub> and the different *h<sub>s</sub>* are not facts about the world but hypotheses: they do not characterise the way things are but rather the way things are conceived of in our rationality.

#### *The non materiality hypothesis*

Let us suppose that ETI shares with us the aspects of our contemporary occidental rationality expressed by H<sub>0</sub>. This would not prevent it from believing that the way John's utterance caused Paul's action is that the vibrations emitted by John during his utterance physically caused Paul to get up and close the window. Though it hurts our contemporary occidental rationality, this idea is not absurd: the fact that we simply cannot take it seriously does not *make* it false<sup>10</sup>. Moreover, utterances do have observable physical effects: a loud voice can hurt the hearers' ears, specific frequencies can break crystal, etc. What our rationality cannot accept is the idea that the linguistic effects of the utterances could be reduced to material causality. In order to rule out this idea, we need another hypothesis, which is also characteristic of our rationality rather than of the state of the world:

H<sub>1</sub> The linguistic effects of an utterance are not due to material causes

As a consequence of H<sub>1</sub>, if we cannot believe that the observable actions caused by an utterance are due to its materiality, we are bound to admit that they are due to its form. In our rationality, the causal attribution requested by H<sub>0</sub> is constrained to be a formal causality.

#### *The non immediateness hypothesis*

If we use the term *sentence* to refer to a category of form of utterances, we start to be in the position to fill the gap between what we can observe (utterances and behaviours) and what we want semantics to talk about (sentences and meanings). However, there is yet another option that our rationality compels us to rule out: ETI could accept H<sub>1</sub> and believe that though the causality that links John's utterance to Paul's action is not material, it directly determined Paul's action. That is, one could believe that John's utterance directly caused Paul to close the window, without leaving him room for a choice. This sort of belief corresponds to what we can call a 'magic thinking'; indeed, in Ali Baba's tale, for instance, there would be no magic if the "sesame" formula were recognised by a captor which would send an "open" instruction to a mechanism conceived in such a way that it could open the cave. The magical effect is due to the directedness of the effect of the formula. It is interesting to note that this feature of our rationality, which compels us to reject direct causality of forms, is rather recent and not completely 'installed' in our cognitive systems: there are many traces in human behaviour and in human languages of the 'magic thinking'. From some uses of expressions like "Please" or "Excuse me" to greetings such as "Happy new year!", an impressive series of linguistic expressions and social behaviours suggests that, though a part of our mind has abandoned the

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<sup>10</sup> Some Buddhist sects seek the "language of nature" in which the words emit the exact vibrations which correspond to the objects they refer to...



‘magic thinking’, another part still lives with it. Think, for instance, about the effects of insults on normal contemporary human beings...

However, for scientific purposes, we definitely abandoned the ‘magic thinking’ and, again, since it is a characteristic of our rationality and not a matter of knowledge about the world, no observation can prove that it has to be abandoned: we need another hypothesis, which could be stated as follows:

H<sub>2</sub> The directly observable effects of utterances are not directly caused by them

The acceptance of that “anti-magic” hypothesis has at least two types of consequences on the conception one can have of human being.

The first type of consequences pertains to ethics: if utterances do not directly cause observable effects on human actions, no human being can justify a reprehensible action arguing that they have been told or even ordered to accomplish them. If a war criminal tries to do so, he or she will give the justified impression that he or she is not behaving like a human being, but rather like a kind of animal or robot. As human beings, we are supposed to be responsible for our actions; which does not mean that we are free, since a reprehensible decision could be the only way of serving vital interests. Though this type of consequences of H<sub>2</sub> are serious and important, they do not directly belong to the subject matter of this paper and we will have to end the discussion here. However, we think they were worth mentioning...

The second type of consequences of H<sub>2</sub> concern the relationship between semantics and cognitive science. Indeed, H<sub>2</sub>, combined with H<sub>0</sub> and H<sub>1</sub>, can be seen as a way of setting the foundations of a science of human cognition and of picturing its relationship with related disciplines. If we admit, in agreement with H<sub>0</sub>, H<sub>1</sub> and H<sub>2</sub>, that an utterance indirectly and non materially causes an action, we are bound to accept the existence of a non physical causal chain linking the utterance to the action, part of that chain being inaccessible to our sensorial apparatus. The object of semantics is the first link of the chain; the first internal state can be seen as the *utterance meaning*. The action is determined by a causal lattice in which the utterance meaning is a part, and which includes many other elements and links; none of these elements or links are directly observable, though indirect observation can suggest more or less plausible hypotheses about them. Different theoretical frameworks in cognitive science construe that causal lattice in different ways; they also use the variations of different observable parameters in order to form these hypotheses. In our example, the only two directly observable parameters were utterances and actions, for the part of the lattice that we are interested in is the chain that links utterances to actions. However, other kinds of cognitive science experiments could be interested in studying the variations of other directly observable parameters, such as electrical excitation, visual input, outside temperature, etc. for the beginning of the chain and movement characteristics, body temperature, attention, etc. for the end of the chain<sup>11</sup>.

The fact that cognitive science and semantics may share experimental devices is not sufficient to suggest that there can be a “cognitive semantics”: the object of semantics (the link between utterances and utterance meanings) does not belong to the causal lattice which constitutes the object of cognitive science.

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<sup>11</sup> I obviously didn’t choose realistic nor very interesting parameters... but my purpose is only illustrative.

#### **4. Why constraints on argumentation ought to be *specifically* accounted for in a scientific empirical theory of sentence meaning**

We now have elements to answer the question: under what conditions the semantics of human languages could be an empirical science? We have seen that, in order to describe its object of study, sentence meaning, it is necessary to observe accessible traces of utterance meanings, and abstract from these observations: the sentence meaning descriptions have to account for what is invariant in the utterance meanings across the different situations. More precisely, if all the utterances of a sentence S share some property P whose accessible traces can be observed in the reactions of the audience in the different utterance situations, the semantic description of S must include a property P', which is responsible for the property P in all the situations. Without that constraint, there is no guarantee that the semantic description of S is (i) based on empirical observation and (ii) valid for S itself and not only for some utterances of S.

##### **4.1. Why constraints on argumentation *ought* to be accounted for**

Keeping that in mind, semantics cannot limit itself to describing the informational aspects of meaning: several non-informational properties of utterances do not depend on situations and if they were not described within a semantic theory, they would be simply forgotten... One of these properties concerns argumentation. It is not difficult to observe that, though not all utterances are argumentations, any sentence, whatsoever, can be uttered in a situation in which that utterance *is* an argumentation. Thus, for instance, though it is true that if someone utters "It is 8 o'clock" as an answer to the question "What time is it", he/she is normally not making an argumentation; however, the very same sentence "It is 8 o'clock" can be uttered in a situation in which the speaker is trying to have the addressee hurry up... Obviously, sentences cannot determine the argumentative orientations of their possible utterances (be it only because some of those utterances do not have argumentative orientation while other ones do...). Nevertheless, they must impose constraints on *argumentativity* since, otherwise, any sentence could be used for any argumentative purpose: and this is not the case. For instance, "It is only 8 o'clock" cannot serve the argumentative orientation *it is late*.

The fact that absolutely all sentences can be used in an argumentative utterance requires that an empirical semantic framework for human languages be able to account for the constraints sentences impose on argumentation. In the following sections, we will show that these constraints cannot be derived from truth-conditions or other 'informational' frameworks; we will then introduce the Theory of Argumentation within Language and present its aims and functioning. We will finally go back to the relationship between semantics and cognition and discuss the interest of that approach for cognitive research.

##### **4.2. Why specifically**

The leading trend in linguistic semantics identifies meaning with information. From Montague to Chomsky, from Situation Semantics to Discourse Representation "theory", the models change but not the fundamental assumptions. According to those assumptions, the meaning of a natural language sentence is a state of the world. This point of view specifies the notion of *information* which is equated with meaning: it is not the Shannonian concept of *noise reduction* –since this concept could not be identified with the notion of *state of the world*–, but rather the logical-conceptual notion of *truth-conditions*, which we have seen above, in connection with the conceptual organisation of scientific knowledge. The different models in that classical trend mainly differ in their conception of how the meanings of parts of discourse assemble to form the sentence's truth conditions (or, equivalently, the information conveyed by the sentence).

I will now very briefly show that natural languages differ from logical reconstruction systems in (at least) three *essential* points<sup>12</sup>.

a) The role of the utterer

Natural language utterances have a single, individual utterer who takes the responsibility for them, while logical languages utterances have a universally quantified utterer. Understanding a natural language utterance involves a characterization of its utterer. Utterances of the Italian sentence:

il cane è ancora sul tappeto

can be understood only by someone who understands the relationship between the utterer and the dog (it is *still* vs. *another time* on the carpet)

b) The concept of truth

- (1) the concept of truth, which is *central* in logical reconstruction languages is only *useful* in natural languages;

*Example*

The meaning of

The dog is on the carpet

is certainly different from the meaning of

The carpet is under the dog

however, the two sentences have exactly the same truth conditions.

Moreover,

- (2) when the concept of truth is used, it is not the same concept as the one central to logical languages.

Indeed, the concept of *truth* in logical languages is opposed to that of *falsity*, while, in natural languages, it is opposed to that of *lie*.

It is easy to find *falsities* that are not *lies*, as well as *lies* that are not *falsities*.

*Example*

- "I live in Bologna", said at a conference in Sydney to a Japanese participant by someone who lives in Casalecchio (a small town which touches Bologna), would be *false* (since Casalecchio is different from Bologna and is not included in it), but would not be a *lie* (it would probably be the best way to have the hearer understand where the speaker lives).
- "No, I don't have cigarettes" said by someone who only has cigarillos to a beggar who asked for a cigarette, would be *true* (since a cigarillo is not a cigarette), but would certainly be a kind of *lie* (since one can expect the beggar to be at least equally pleased with a cigarillo...).

c) Variability vs. stability of meaning across occurrences

It is essential for logical reconstruction languages that each term of the language be associated with one and only one meaning<sup>13</sup>. This is, among other, to insure that, whenever the same term occurs several time in the same utterance, it refers to the same concept. In natural languages, the 'rule' is exactly the opposite: whenever the same word occurs several times in the same utterance, it *must* be assigned *different* meanings.

*Example* (inspired from Oswald Ducrot's seminar)

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<sup>12</sup> These points of difference are, actually, connected and the distinction I make is only for exposition purpose.

<sup>13</sup> This is also true for the meaning of variables: their *value assignment* does vary according to the context of their occurrence, but not the way in which that assignment is computed.

In Racine's *Andromaque*, Pyrrhus protects Andromaque's child against the Greeks because he wants her to marry him. The Greeks badly threaten Pyrrhus and Andromaque doesn't seem to accept Pyrrhus' proposition. At that point, Pyrrhus says to Andromaque:

Je meurs si je vous perds, mais je meurs si j'attends<sup>14</sup>

In that utterance, the two occurrences of *I die* cannot be interpreted with the same meaning, because of the presence of *but* (which imposes both an opposition between some consequences of the two 'types of death' and a sort of ranking of those two deaths...). Such a construction is impossible in formal languages (no connectives or operators allow such a differentiation in the interpretation) and would be ridiculous in a 'semi-formal' technical sub-language. Consider, for instance, the following sentence:

- \* The positive square root of X is even if X is multiple of 4,  
but the positive square root of X is even if X is even.

#### 4.3. Language and topical organization of its argumentative structure

From the 'logician' point of view, since *meaning* is *information* (more specifically, truth-conditions), all the effects of an utterance must be derived from the information it conveys and the situation of the utterance. Thus, if two utterances convey the same information in the same situation, the logicist position predicts that all the semantic effects of those two utterances would be identical; in particular, they should –necessarily– have the same argumentative orientation. This prediction is contrary to the observable data. Among the extremely numerous examples, let us consider the following pair of sentences:

John is clever, but he is clumsy

John is clumsy, but he is clever

uttered by two members of the same hiring commission, while considering John Smith's application.

The argumentative orientations of the two utterances are clearly opposed, while in this single situation, the information they convey is the same (in the sense of truth-conditional, objective information)<sup>15</sup>.

A careful examination shows that examples of this kind, far from being exceptions, are central in natural languages, and not only when connectives are used<sup>16</sup>. If we consider these facts as relevant for language description, we have to provide, within the semantic description, an independent treatment of argumentation.

Once we have reached this point, three positions can be argued (the fourth one –the *logicist* position–, has already been eliminated):

a) the *minimalist* position:

According to this position, not all utterances have argumentational effects and, thus, the necessity of directly accounting for argumentational phenomena within semantics only concerns a few number of words and constructions of natural languages. The informational effects are central, while the argumentational ones are peripheral.

b) the *centralist* position

According to this position, all words and constructions of all natural languages need an argumentational description, even when they occur in utterances that are not explicitly

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<sup>14</sup> "I die if I lose you, but I die if I wait".

<sup>15</sup> As an evidence for that, note that none of the two commission members would hold that the other is mistaken about the state of the word, or lied, or simply uttered a false statement.

<sup>16</sup> A host of examples such as "John is intelligent" vs "John is cunning" can be found to illustrate this point.

used in an argumentation. An informational description may also be needed, but it is never enough to exhaust the semantic description.

c) the *maximalist* position

According to this position, the necessity of directly accounting for informational phenomena within semantics only concerns a few number of words and constructions of natural languages. The argumentational effects are central, while the informational ones are peripheral.

As we have seen, position a) is unacceptable. It would be too optimistic to seek a general proof of the accurateness of position b) or position c); however, for each alleged counter-example provided by the tenants of the *minimalist* position, there has been –up to now– a way of proving either that it was not a natural utterance or that it needed an argumentational description. On the other hand, there are still examples that the tenants of the *maximalist* position consider as relevant facts though the description of their informational aspects cannot –for the time being– be derived from that of their argumentational aspects<sup>17</sup>.

In order to describe the argumentative inferences involved in the semantics of natural languages, one must have made a decision concerning the following problem.

Consider the following argumentations:

- a) The weather was cold last night: the plants must be in a bad shape
- b) There has been frost last night: the plants must be dead
- c) The weather was mild last night: the plants must be in a good shape

One can either take the standpoint that each of these utterances rely on a different argumentative warrant:

- a. When the weather is cold the plants generally suffer
- b. When the weather is chilling, the plants generally die
- c. When the weather is mild, the plants generally go well

or else consider that all of these argumentations rely on one and the same rule relating the weather to the health of the plants.

From the latter point of view, which is the one I adopt, since this rule is to be applied to all of the possible argumentations differing from one another only by the intensity, it must be gradual. In the case under study, it would be of the form:

*The better the weather, the better the health of the plants*

or *The worse the weather, the worse the health of the plants*

Gradual rules of this kind are categories of warrants; they are called *topoi* (singular: *topos*) and have been studied within the framework of the theory of Argumentation within Language. The description of natural language operators and connectives is extremely facilitated by the use of *topoi*<sup>18</sup>.

It turned out that the description of lexicon also needed *topoi*<sup>19</sup>. If, for instance, we want to describe the meaning of the word *rich* only using an informational (truth-conditional) description, we cannot account for the odd effect of

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<sup>17</sup> Consider, for instance, the opposition between "John has finished" and "John has almost finished". The informational difference between utterances of those two sentences cannot be accounted for in terms of argumentative orientation, since it remains even in the cases in which they have the same orientation.

<sup>18</sup> See, for instance, Raccach (1987) for a description of *but*; or Bruxelles and Raccach (1987) for a description of the French *si...alors (if...then)*.

<sup>19</sup> See Raccach (1987) or Bruxelles *et al.* (1995) for a more detailed discussion.

This baby is rich

Again, one can think that the oddness of the utterances of that sentence is only a marginal phenomenon. In that case, one should not bother trying to describe the word “rich” in such a way that this oddness could be predicted. But if one considers, as I do, phenomena of this kind as central for natural languages, it becomes necessary to deal with that question.

Using the topoi, the oddness of the utterances of the sentence above can be predicted. The descriptive apparatus needs to assign *lexical topical fields* to words<sup>20</sup>. In particular, the word *rich* is assigned the topical field

<POSSESSION, *power*>

That is, the word *rich* triggers an instruction such as: <see possession as a source of power!><sup>21</sup>.

## 5. From argumentation to *points of view*

Since the argumentative orientation of an utterance is part of its utterance meaning, we may understand that that an *argumentative orientation* is a *point of view* defended by the utterance.

At this point, it is useful to distinguish between

1. Points of view that result from the interpretation of an utterance
- and
2. Points of view that must be met in order to understand an utterance.

The first kind of point of view are attributed to the speaker and may be questioned by the hearer, while points of view of the second kind are presented as shared by the speaker and the hearer (for that reason, they are sometimes called “argumentative presupposition”); they reveal the ideology within which the speaker rests.

A well known example illustrates the distinction. Consider an utterance of the sentence

(1) John is a republican but he is honest

- in a situation in which speaker and hearer wonder whether they can trust John for some particular matter. An utterance of (1) clearly defends a positive point of view about trusting John, though, in order to understand it, one *must* admit –at least for a second– that republicans should not be trusted in general. This effect is due to the specific constraint on interpretation imposed by “but”, according to which the two members of the utterance must defend opposite points of view; given that “honest” indicates, in any situation, a positive point of view regarding trust, it is not possible to understand utterances of (1) without building a negative point of view as to whether republicans should be trusted. In order to better understand the strength of the semantic constraint imposed by “but”, it is useful to examine an example where normal hearers have real cognitive difficulties adopting points of view which fulfil the constraints imposed by “but”.<sup>22</sup> Consider an utterance of the sentence

(2) It is raining but I have to finish my work

in a situation in which it is an answer to an offer to go out for a walk. The first impression given by utterances of (2), in situations of the kind envisaged, is that the speaker made a

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<sup>20</sup> See next session for more details on topoi and topical fields.

<sup>21</sup> Note that these instructions are language dependent (and even community dependent –cf. the difference between the English *rich* and the Spanish *rico*–).

<sup>22</sup> We are not trying to suggest that republicans are objectively generally dishonest: the example would work the same with democrats or ecologists... What *is* suggested is that it is *cognitively* easy to imagine that the speaker supposes that the hearer shares that point of view with him/her.

mistake or that there is something wrong somewhere. If an observer is urged to understand the utterance *as it is*, she/he might eventually imagine that both the speaker and the hearer are members of some ‘rain lovers’ club, and there will be no interpretation problem... The cognitive effort is heavy<sup>23</sup>, but such a far-fetched hypothesis is the only way to build an interpretation for the utterance; this shows the strength of the semantic constraint imposed by “but”.

### 5.1. Describing argumentative constraints

We have seen that semantics *must* describe the constraints that linguistic units impose on points of view, and we saw that it *must* distinguish between *constraints suggested* and *constraint imposed* (or *presupposed*<sup>24</sup>). It is now time to show that this *can* be done...

We will first examine some properties of a few special cases which will be used for the description of the general case. After showing how these properties can be extended to the general case, we will sketch the basic elements of the technical apparatus, leaving the details for technical reports.

#### 5.1.1. *Special cases*

##### **Articulators**

Some of the constraints on points of view are imposed by articulators (i.e. connectives like “but” and operators like “even” or “little”). They are language-specific and can be very different from one human language to the other. We saw, in the last section, the two constraints “but” imposes on points of view: they concern the articulation between the points of view that the utterance can have the hearer construct.

##### ***Euphorical / Dysphorical words***

Some words impose positive (resp. negative) judgements wherever they are used, and whoever uses them. Words like “interesting” or “honest” (that we saw in the last section), impose a positive judgement even if used by a boring or a dishonest speaker; words like “stupid” impose a negative judgement even when used by non-intelligent speakers.

Combining the constraints of the articulators with the euphorical / dysphorical properties allows an observer to *compute* the ideological force of other words in an utterance. The ideological force, computed in that manner, may vary, for the same word, from an utterance to the other

John is a republican but he is honest

John is a republican but he is dishonest

It follows from that last observation that ideological forces computed in that way cannot, generally, be attributed to the words of the language and do not belong to the semantic description. As we will see in the next section, in order to be entitled to consider an ideological feature as a possible candidate for the semantic description of a linguistic unit, pairs like the one above should show one (and only one) problematic utterance.

#### 5.1.2. ***General case***

Other words impose more sophisticated judgements which are encoded as in a micro-programme provided by the human language which they belong to. Here the diversity across languages is even stronger than for the articulators. Those micro-programmes, attached to the

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<sup>23</sup> Surely heavier than to imagine that republicans are not, in general, honest...

<sup>24</sup> The term “presupposed” is used by analogy with logical presupposition: the phenomenon described here shares properties with classical presupposition but cannot be identified with classical presupposition (the first essential reason is that one concerns truth values while the other one does not concern truth at all).

words, require accepting the influence of specific points of view on some entities onto the points of view from which one will consider some other entities. For instance, the word “lavorare”, in Italian requires that the *activity* referred to be considered from the point of view of *tiredness*<sup>25</sup>

As an illustration, we will examine a few examples concerning the word “rich”. We will let the reader appreciate, in (5)-(8), whether the utterances marked as problematic do suppose specific hypotheses on the situation.<sup>26</sup>

John is rich: he has a lot of power

?? John is rich: he has very little power

?? John is rich but he has a lot of power

John is rich but he has very little power

These pairs of examples suggest that the set of constraints which describes the word “rich” should include *seeing possession as source of power*. A last example concerning the semantic description of “rich” is an apparent curiosity, which becomes highly predictable as soon as one seriously envisages that the constraints which the words of a human language impose are not *constraints on denotation*, but rather *constraints on points of view*.

?? This baby is rich

This baby just inherited a huge fortune

Though the logical proposition one can associate with (10) *implies* the logical proposition one can associate with (9), utterances of (9) are *problematic*, while utterances of (10) are not. The explanation of this otherwise puzzling fact is the conflict between the points of view on power suggested by “baby” with the point of view on power suggested by “rich”.

## 5.2. More about *topical fields*

As a result of what has been said, the main idea which guides acceptable theoretical models for the semantics of human languages is that sentences do not merely convey information, but also give conventional indications on how this information is seen by the speaker. In this section, I present the characteristic features of one of these acceptable models: the concepts related to *topical fields*.

The concept of *topical field* is used to represent these conventional indications on points of view. Thus, if we accept that information can be represented as *conceptual fields*, a *topical field* can be seen as a point of view on some information, that is, as a valuation of a conceptual field. We can thus represent topical fields as ordered pairs <CONCEPTUAL FIELD, *valuation principle*>, where the *valuation principle* can be either a judgment (in that case, we have an *elementary* topical field), or another topical field (in that case, we have a *compounded* topical field)<sup>27</sup>. A more formal definition is the following:

### *i. Elementary topical field:*

An ordered pair <CF, *val*> is an *elementary topical field* if and only if:

CF is a conceptual field, and

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<sup>25</sup> See Bruxelles and al. (1995) for more details on the description of that word.

<sup>26</sup> It is reminded that, in semantic examples, nothing syntactically correct can be considered ‘impossible’ or ‘non interpretable’: an utterance is *problematic* if specific hypotheses concerning the situation it refers to or the situation in which it must be interpreted are *necessary* in order for the utterance to be understandable. Such utterances are understood thanks to some knowledge of the situation, while *non problematic* utterances need only knowledge of the language to be understood. Another way to put it is that the contribution of language to the interpretation of problematic utterances is insufficient, while the contribution of the situation the interpretation of non-problematic utterances is insignificant.

<sup>27</sup> See Raccah (1990) for an introduction to topical fields in connection with the *Theory of Argumentation Within Language*; see Raccah (2010) for an application to the *ViewPoint Semantics*.



*Val* is a member of the simple evaluation set {good,bad}

ii. *General recursive definition*

An ordered pair <CF,TF> is a *non-elementary topical field* if

CF is a conceptual field, and

TF is either an elementary topical field or a non-elementary topical field

iii. *Closure*

X is a *topical field* if and only if it is

either an elementary topical field

or a *non-elementary topical field*

As expected, a topical field, considered to be a way of seeing a conceptual field, may also serve as a valuation principle for other topical fields. Simple valuations (*good / bad*) on conceptual fields, regardless of there being a justification for them, lead to *elementary topical fields*.

### 5.3. Topoi

A *topos* is a category of warrants of argumentation. Keeping in mind that an argumentation presents itself as inducing a point of view, we can see a topos as relating two *topical fields* in such a way that the points of view represented by the first topical field (*antecedent*) influence the points of view represented by the second one (*consequent*). The general form of a topos is thus

//the more (the less) P, the more (the less) Q//

where P and Q are topical fields.

Depending on the degree of integration of the topoi in the culture of a linguistic community, three kinds of topoi must be distinguished:

- Dynamic topos: they are evoked by utterances or discourses, in their situations of interpretation.
- Cultural topos: they may be evoked by –not very original– utterances or discourses, *and* are shared by a linguistic community.
- Lexical topos: they may be evoked by –*doxical*– utterances or discourses *and* are shared by a linguistic community, *and* are ‘crystallised’ in the words of the natural language spoken within that community.

Present research in lexical semantics, within the framework explicated above, aims at *building* and *applying* contrastive linguistic tests which can rigorously exhibit the status of the topoi evoked by utterances<sup>28</sup>. This technical phase is useful and necessary in order to accurately and systematically provide lexical descriptions which include all and only the topoi which are crystallized in the words of the different languages taken into consideration. A ‘by-product’ of this research direction is the specification of the cultural differences encoded in the different human languages analysed (this will allow, for instance, to better understand how –and what of– culture, beliefs, ideology are crystallized –or ‘encapsulated’– in the words of a language. In particular, research on the relationship between lexical description and the semantics of proverbs<sup>29</sup> and/or idiomatic expressions<sup>30</sup> is in progress. Another ‘by-product’ (in a long-term prevision...) is the realisation of multi-lingual dictionaries of the ideologies crystallised in the different linguistic communities, based on the systematic topical description of the lexical entries of different natural languages.

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<sup>28</sup> See, for instance, Chmelik (2005) for a description of one test and for its application.

<sup>29</sup> See, BenMahfoudh-Hubert (2005).

<sup>30</sup> See Creus (2004).

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