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**Models of language: towards a practice-based account of information in natural language**

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# Introduction

The present work is concerned with two models of linguistic information. It does not deal with a development of the formal (or technical) characteristics of these models, but rather it inquires into their philosophical presuppositions. One such model is the one provided by the discipline known as formal semantics; the other one is based on a particular account of the use of symbols in our everyday life. The purpose of the present work is to argue for the thesis that the latter, and not the former, provides us with promising tools to represent the information carried by language.

A study of this kind of information is important in its own right, but my interest in it stems from its connection with other concepts, namely, linguistic understanding, linguistic communication, and, above all, our ‘human world’ in which language is paramount. That is, my interest in this subject lies in the conviction that language and the information it carries are interdependent with our individual abilities to speak and comprehend language, as well as with the ‘human world’ that we live in—the nature of which is both physical and social. This is an inquiry into an aspect of what human beings are; it deals with one way in which our individual abilities allow us to create ‘objects’ and participate in exchanges with other people, and the way these ‘objects’ and these exchanges in turn influence our individual abilities and make us into what we are.

Language refers to grass, snow, and donkeys, but also to symphonies, universities, and money. These ‘objects’ partly constitute our ‘human world’. Regardless the non-physical nature of the latter sort of objects, the fact remains that we understand and talk about them; we do not go about our everyday life wondering about their reality; they are out there and have an influence on our actions, while at the same time they are partly constituted by our actions. The question arises, how do we account for them? What has language got to do with all this? How can we best approach these issues?

The most fruitful way to address these questions, in my view, is to start out from the idea that a study of linguistic information need not meet reductionist

scrupulous. Contrary to mainstream theories of language, I believe that the question as to how to reconcile our layman conceptualization of linguistic information, which deals with non-physical ‘objects’, with the world as described by the natural sciences is a vexed one.<sup>1</sup> That is, no illuminating answer about linguistic information can come from such reconciliation. For the study of this kind of information is not in the business of making claims as to what the ultimate constituents of the world, the universe, or reality as such, are. The ‘objects’ presupposed by our language deserve to be explained in their own terms, that is, they need not be reduced to atoms, sense data, stimulus, responses, neural activity, or what have you.<sup>2</sup>

Note that the previous claim that a study of linguistic information is different from metaphysics as such requires that we can make a principled distinction between the ontology presupposed by our language (which includes ‘objects’ such as universities, numbers, beliefs, etc.) and metaphysics as such. We can see this on the basis of the following consideration. Even if someone claims that everything ultimately supervenes on the physical, her argument for this very claim can appeal to theories, logic, common-sense, beliefs, etc., and thus her argument, and *a fortiori* the language in which it is framed, presuppose ‘objects’ that do not belong to the metaphysics that she tries to defend.<sup>3</sup>

The account propounded here is not as reactionary as it might seem at first sight. One of its main presuppositions is that linguistic information is a complex system. Not only can a complex system not be explained in terms of the properties of its individual components—i.e., the speakers of a community—, but the ‘logic’ of the system requires an explanation at its own level. The following quote from Marr (1982) presents a useful analogy to highlight this characteristic of complex systems:

Almost never can a complex system of any kind be understood as a simple extrapolation from the properties of its elementary components. Consider, for example, some gas in a bottle. A description of thermodynamic effects—temperature, pressure, density, and the relationships among these factors—

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<sup>1</sup>Hence, I disagree from the start with Searle’s philosophical motivations to studying our social world. For he starts from the ‘fundamental question in contemporary philosophy’, namely “[h]ow, if at all, can we reconcile a certain conception of the world as described by physics, chemistry, and the other basic sciences with what we know, or think we know, about ourselves as human beings?” (Searle, 2010, p. 3)

<sup>2</sup>I believe that there is no definite answer as to what shape a non-reductionist account of these objects must take, but there seem to be clear constraints on the conditions of adequacy of these accounts, as I shall try to explain later on.

<sup>3</sup>This is not a paradox, but an argument to the effect of showing that metaphysics and the ontology presupposed by our language are different. Such a difference can also be maintained regardless the fact that each account of the ontology presupposed by language requires a particular metaphysics. However, while the question as to the metaphysics cannot be avoided, the point still remains that such question need not arise at the stage of an account of the ontology presupposed by language.

is not formulated by using a large set of equations, one for each of the particles involved. Such effects are described at their own level, that of an enormous collection of particles; the effort is to show that in principle the microscopic and macroscopic descriptions are consistent with one another (Marr, 1982, p. 20).

Linguistic information is a phenomenon that arises at the level of the interaction between the members of a community. Though it depends on the individual properties of each member, it does not reduce to it. It will be argued that an empirical study of language is a two-fold structure: it requires an account of both practices—i.e., what organizes the interactions amongst the members of a community, as well as their interactions with the physical world—and their individual abilities.

Perhaps not surprisingly, such conception of linguistic information entails a number of criticisms of other traditional accounts. These traditional accounts shall be personified in the ‘formal semanticist’, who will be held accountable of putting forth a formal, rule-based model of linguistic information that is not up to the task. On the other hand, we shall see that there are interesting connections between my presuppositions and more empirically oriented approaches to language, such as usage-based grammar, a review of which shall lead the way to proposing the outline of an alternative account of semantics—i.e., my own model of linguistic information as a complex system.

Such are the issues that my discussion of the two models is concerned with. After a short introduction to the two models I shall attempt to give an outline of the arguments that support the above-mentioned thesis.

## Formal semantics

Formal semantics<sup>4</sup> is a conglomerate of different formal theories with one goal in common: to study the semantics of natural language<sup>5</sup> by means of logical tools. The pioneers of formal semantics are, among others, Rudolf Carnap, Richard Montague, Donald Davidson, David Lewis, and Maxwell Creswell. The unifying ideas underlying the myriad formal theories arising from the work of the above-mentioned leading figures and of those inspired by them are: (a) that each sentence of the language has a definite (and unique in the case of unambiguous sentences) literal meaning; and (b) that this meaning can be modeled with the help of logical tools.

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<sup>4</sup>The name “formal semantics” is widely accepted, though it is not the only one in fashion. Other terms to refer to this enterprise are “logical grammar,” “logical semantics,” “truth-conditional semantics,” “formal theories of meaning,” etc. Henceforth I will simply use the name “formal semantics.”

<sup>5</sup>For the sake of simplicity, I will often use the term natural language, or simply language, in the singular, but I by no means wish to imply that there is only one language.

For present purposes, the model of the information carried by language put forth by the formal semanticist can be characterized as follows. To begin with, the formal semanticist claims to have achieved a model of the way in which the meanings of complex expressions (sentences, in particular) depend on the meanings of their constituents. Hence, the primary target of explanation is the meaning of *sentences*, not *words*.

Another characteristic of formal semantics is the primacy of the relation between language and world. Following in Frege's footsteps, the formal semanticist claims that language is connected to the world in two steps. Linguistic expressions are connected to meanings, and through them, to the world. Meanings are real objects, though not of the observable kind; they are the glue that connects language and world. Hence, language and world are conceived as two separate entities, independent from one another and thus requiring some form of connection; and it is the meanings of the expressions of language that come to the rescue. Note that such a conception presupposes that every 'object' to which signs can refer is independent from these signs and, *a fortiori*, it is determinate prior to the use of these signs. But while this property seems unproblematic in some cases (e.g., rocks, grass, snow), it is not adequate as a property adorning each and every 'object' to which language can refer (we shall see why later on).

This picture of meaning, moreover, presupposes a distinction between 'structural' (or 'formal') meanings and 'full' meanings of expressions (when the expression is a word, 'full' meanings are referred to as 'lexical' meanings). Structural meanings determine the semantic categories of expressions, which determine two things: how the reference of these expressions is fixed (or how their truth conditions are fixed, in the case of sentences), and how objects in this category enter in combination with objects from other categories to form complex structural meanings (note that the combination of an object from a given category is restricted to objects from certain other categories). For instance, the structural meaning of a name is a function such that to each possible world  $w$  it assigns an entity of the domain of  $w$ ; the structural meaning of a common noun is a function such that to each possible world  $w$  it assigns a subset of the domain of  $w$ . These two semantic objects can combine to determine, for each possible world  $w$ , a truth value depending on whether the entity in  $w$  determined by the name is a member of the set in  $w$  determined by the common noun.

Though it does not seem to be stated explicitly, it certainly is treated in practice by the formal semanticist as if the full meaning of an expression can only consist in (a) *how* its reference is determined together with *which* particular reference it has (e.g., names, nouns); (b) *how* its truth conditions are determined together with *which* particular truth conditions it has (sentences); and (c) the particular way the expression combines with other expressions to produce one of the former cases (adjectives, adverbs, logical constants, definite descriptions, etc.).

More often than not, the formal semanticist makes two important presuppositions as regards the nature of language and linguistic competence. Language is conceived as an (infinite) set of sentences that is generated from a (finitely presentable) set of rules of composition. It is assumed that this set can be defined prior to, and independently of, linguistic competence and linguistic communication. Moreover, linguistic competence is conceived as knowledge of language (where language is already conceived as above).<sup>6</sup> This conception of competence explains, according to the formal semanticist, our ‘intuitions’ about productivity and systematicity of our linguistic competence. However, such an explanation depends, among other things, on the presupposition that properties of language and properties of linguistic competence mirror each other.<sup>7</sup> But is this presupposition as harmless as it seems?

On the basis of this conception of linguistic competence, the formal semanticist conceives of the information exchange process, which takes place by means of language, as the way in which particular uses of language modify the agents’ information states. An information state is conceived as a mental state that consists of the epistemic alternatives open to an agent. The agent’s epistemic alternatives are represented in terms of the contents of sentences.<sup>8</sup> Thus, an information state specifies which contents an agent bears an epistemic relation to, and which contents the agent does not bear an epistemic relation to. This distinction exhausts the collection of all the contents of the sentences of the language, or at least this is how this issue is treated in practice. Hence, this conception of the information exchange process presupposes that the agent already understands all the sentences of the language. Or, at least, it presupposes that the agent already understands the sentences that she uses. But while this model has proved useful to develop formal accounts of the information exchange process (e.g., epistemic logic), it is a moot point whether the epistemic task of the agent, as far as her use of language is concerned, can be characterized in this way (I will argue that it cannot, or at least not in many cases).

Finally, the object of study in formal semantics is usually conceived as the semantic intuitions of competent speakers. Not only is this a contentious kind of a priori methodology, but it is also one that presupposes that, via introspection, it is possible to study the semantics of natural language. But can we study the information carried by language in this way?

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<sup>6</sup>The term ‘knowledge’ is contentious, but nothing in my discussion hinges on it, as shall become clear later on. If desired, the term can be replaced by ‘cognizance’, ‘tacit knowledge’, or any other non-explicit, non-introspective relation between a subject and an object.

<sup>7</sup>For instance, note the role of such a presupposition in the argument from infinity (specially in premise 3). Premise 1: there are infinitely many grammatical sentences; Premise 2: human competence is finite; Premise 3: a competent speaker has tacit knowledge of the entire language; Conclusion: language must be generated by a finitely representable set of rules, where some of them are recursive, and linguistic competence must come down to knowledge of a finite presentation of this set of rules.

<sup>8</sup>A treatment of indexicals obliges a distinction between meaning and content. For discussion see §1.4.

## A practice-based account of linguistic information

My account of practice-based linguistic information is a particular version of the idea that meaning is use. But since this idea has been developed in so many different ways, for the sake of brevity I shall make here no reference to it nor compare it with alternative approaches.<sup>9</sup>

The core notion of this model is the role that signs play in practices, or *practice-based information* for short. But we must hasten to say that, while it is maintained here that such a notion of information permeates language, we need not commit to the idea that this is the only way in which signs can carry information. That is, natural signs (e.g., smoke as a sign of fire), reference-based information, and practice-based information may well co-exist and make part of the information that language carries.

To introduce my alternative, practice-based model of linguistic information, we can appeal to the following way of conceptualizing the information that signs, and objects in general, can carry: a bar-code, a scoreboard, a chessboard, a visa, a 10 Euro bill etc., acquire their meaning not in virtue of standing for something else besides themselves, but in virtue of the role that they play in determinate practices.<sup>10</sup> For what does a 10 Euro bill stand for besides itself? And if we did manage to find out what it stands for, would the relation between the bill and this mysterious referent account for how the bill is meaningful to us? Instead of going down this rabbit hole, I take it that a 10 Euro bill is only meaningful because of the role that it plays in people's everyday transactions. A 10 Euro bill can be used by someone to pay for a cappuccino; it could be the change received after buying a beer; it could be a child's monthly contribution to the piggy bank, etc.

We can try and create an abstract model of this kind of information by means of an analogy with Turing machines. The role a sign plays in a practice can be conceived in analogy with the execution of a Turing machine that is determined by a given sequence of 0s and 1s and a particular program (given that the machine is in the initial state  $S_0$ ).<sup>11</sup> The sign corresponds to the sequence of 0s and 1s that

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<sup>9</sup>But see §3.1 and §3.2.

<sup>10</sup>This model is, of course, a particular version of functionalism. However, it is closer to, though different from, functionalism in sociology (see, e.g., Turner, 2001) than it is to functionalism in philosophy of mind (see, e.g., Levin, 2010). For the role of signs is relative to *practices*, which are 'objects' that cannot be reduced to the properties of individual agents.

<sup>11</sup>"A Turing machine is a kind of state machine. At any time the machine is in any one of a finite number of states. Instructions for a Turing machine consist in specified conditions under which the machine will transition between one state and another. A Turing machine has an infinite one-dimensional tape divided into cells. Traditionally we think of the tape as being horizontal with the cells arranged in a left-right orientation. The tape has one end, at the left say, and stretches infinitely far to the right. Each cell is able to contain one symbol, either '0' or '1'. The machine has a read-write head, which at any time scanning a single cell on the tape.

is introduced into the machine's tape, the practice corresponds to the program, and the role played by the sign corresponds to the execution of the program on the sequence of 0s and 1s.<sup>12</sup>

The information carried by a particular sequence of 0s and 1s consists in that a given program will produce a particular behavior of the head of the Turing machine, which in turn will produce a particular output in the tape. A particular sequence of 0s and 1s is, hence, meaningless on its own, and is only meaningful against the background of a particular program of which the sequence is an input. Moreover, the same sequence may carry different informations relative to different programs.

By analogy, and perhaps not surprisingly, a sign is meaningless on its own. However, perhaps surprisingly, if in this analogy we take it that the Turing machine does not correspond to the brain, and the program does not correspond to the mind, and think instead that the Turing machine corresponds to a social complex that contains a number of people, and the program to a particular organization of this complex, we have a model of information that is not based on properties of individual agents. The sign can carry different informations relative to different organizations—i.e., practices—, and since many practices require more than one participant, the information carried by a sign is only partly constituted by, but is not reduced to, the properties of each participant taken in isolation.

Much of the information carried by language is but a particular case of this more encompassing kind of information, as shall become clear later on. However, do note for the time being that, according to this model of information, language needs no connection with an independent world, and that linguistic competence does not seem to consist of knowledge of such connection. Rather, language requires interaction among people—like the functioning of the components of a Turing machine—, and linguistic competence requires participation in such interaction.

## Criteria of adequacy

The main thesis of the present work is that the model of the information carried by language put forth by the formal semanticist is not adequate, and that the model provided by the practice-based account is more promising. In order to substantiate such thesis, however, we need to get clear the criteria of adequacy that shall be used in this assessment. But we must realize upfront that stating criteria

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This read-write head can move left and right along the tape to scan successive cells. The action of a Turing machine is determined completely by (1) the current state of the machine (2) the symbol in the cell currently being scanned by the head and (3) a table of transition rules, which serve as the 'program' for the machine" Barker-Plummer (2009).

<sup>12</sup>To be sure, this analogy breaks down in different points when the full-blown range of our practices is taken into account, but these breakdowns are revealing on their own. For details, see chapter 3, in particular §4.1.2.



of adequacy is not an independent business; a criticism is always a criticism from somewhere. This means that the criteria of adequacy is inspired by a position that already contains the seeds of the criticism of formal semantics. I will present a motivation for this criteria in a moment.

The criteria that I shall use are the following. First, I stipulate that an account of language should preserve our descriptions of our uses of signs in general, and language in particular, in everyday life. I assume here that our uses of language depend, among other things, on how we experience situations of language-use, and how we react to these experiences. Hence, the account of language should preserve both our descriptions of our experiences of language-use in everyday life—i.e., when I, as experiencer, use language; or when I experience someone else using language—and our descriptions of our reactions to these experiences—i.e., when I, as agent, react to an experience of language-use by doing or saying something; or when somebody else reacts to her experience of language-use. Second, and heeding the motto that the fewer theoretical elements the better, I stipulate that a theoretical distinction or identification should only be posited when it preserves our descriptions of our uses of language (or signs in general) in everyday life.<sup>13</sup>

For the sake of clarity, let us examine the following example of a theoretical distinction that will not be ruled out by the second criterion. Let us suppose that the theorist wants to posit a theoretical distinction as regards the concept of a practice according to the following statement. In order for agent *A* to understand practice *p*, *A* has to be able to carry out instances of *p*. This statement entails a distinction among practices in the sense that two classes are produced: one class contains the practices for which the statement holds and another class contains the practices for which it does not hold. This distinction meets the criteria of adequacy only if it preserves our descriptions of language-use, and the uses of signs in general, in everyday life. Since we can find simple descriptions of everyday practices that satisfy the statement and practices that falsify it, the distinction is adequate. For instance, starting out from the claim that *reading* is an everyday practice, we can ask ourselves whether an agent *A* requires to read in order to understand what reading is all about. In my view, it is clear that we would not describe someone's experiences with written language as acts of understanding unless she was able to read. Hence, reading is a practice that satisfies the statement. On the other hand, starting out from the fact that football *soccer* makes part of our everyday life, we can ask ourselves whether an agent *A* requires to play soccer in order to understand what soccer is all about. In my view, it is clear that someone's experiences can be described as understanding soccer, as well as the signs used therein (e.g., the court's divisions, the uniforms, the referee's cards, the flags, etc.), without her being able to play soccer. Hence, soccer is a practice that falsifies the statement. Thus, the distinction is adequate as far as the second criterion of adequacy is concerned.

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<sup>13</sup>Note that since an account of language might very well use theoretical distinctions or identifications, the second criterion is a particular case of the first one.

Note that these criteria are far away from the by now widely discredited behavioristic orientation in psychology and philosophy. To begin with, the categories used by behaviorism are those of stimulus and response. These categories must be described in objective terms with no reference to subjective experiences. This cannot be further from the present criteria of adequacy. Note that while people's reactions in terms of doings and sayings are an important part of the present criteria, they constitute but one element thereof. For what the criteria is concerned with are our *descriptions* of our *experiences* of our use of signs, and our descriptions of our reactions *to these experiences*. Hence, such descriptions are not couched in objective terms. The criteria recognizes the interdependence between reactions and experiences and does not attribute primacy to either one of them.<sup>14</sup>

The motivation for these criteria is as follows. We must start from the idea that some 'objects' that language speaks about are not independent from the use of the symbols that 'express' them in everyday situations; such 'objects' depend on, and partly constitute, the 'human world' that contains our myriad everyday activities. The dependence of 'objects' of this sort on the use of symbols can be characterized in the following way. Let us suppose that the 'object' is a concept  $C$  and that " $C$ " 'expresses'  $C$ . Furthermore, let us suppose that " $a \in C$ " refers to the fact that  $a$  belongs to the extension of  $C$ . We shall say that  $C$  depends on the use of " $C$ " inasmuch as the truth of " $a \in C$ " (in a given context) depends on the correct use of " $C$ " (in such a context). There seem to be clear cases of this kind of concepts, which permeate our myriad everyday activities. For instance, if  $C$  is the concept [ $x$  is worth  $e$  euros], the fact that a good  $a$  is worth  $e$  euros (i.e., that  $a \in [x \text{ is worth } e \text{ euros}]$ ) depends on the seller's, or the store that negotiates with the good, making a proper use of an expression that expresses the concept [ $x$  is worth  $e$  euros]. Another example is the following. That a child is 'it' depends on another child's, who also participates in the game, touching her and saying "You are it!". Furthermore, that a football player is 'booked'—i.e., that the player receives a yellow card—depends on the referee's stopping the game and showing a yellow card to the player in a particular way. That is, if  $x$  is a soccer player and  $C$  is the concept [to-have-gotten-a-yellow-card] (or [to-have-been-booked]), the fact that  $x \in C$  depends on the use of a gesture that expresses the concept [to-have-gotten-a-yellow-card]. Another example is to be granted a visa to legally work in a country. You are granted a visa when you fulfill some requirements, apply for the visa, pay the respective fee, and finally receive a letter from the embassy and a stamp in your passport. That is, if  $x$  is a citizen and  $C$  is the concept [to-have-been-granted-a-visa (for country  $X$ )], the fact that  $x \in C$  depends on the use of a symbol (e.g., a stamp or a letter) that expresses the concept [to-have-been-granted-a-visa]. Yet another example is the fact that a person's belonging to a university depends on the university staff's

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<sup>14</sup>This claim will become clearer in my discussions of communicative success (see §2.3.3) and language intelligibility (see §4.1.3).

appropriately referring to the person as a student of the university (as well as on the proper use of identifications, certificates, diplomas, etc.). I shall call *symbolic kinds* the concepts the extensions of which depend on the uses of symbols that ‘express’ them.

Many of the concepts that make us into what we are are symbolic kinds, though there are also several other kinds of concepts. Symbolic kinds point out that our life in our ‘human world’ is permeated by our uses of symbols in general, and language in particular. Moreover, to the extent that linguistic understanding depends on the recognition of the extension of concepts, the understanding of the symbols that express symbolic kinds depends on the recognition of uses of symbols. Whence the relevance of preserving our descriptions of our uses of symbols.

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My assessment of formal semantics starts from the perhaps unusual idea—that is, unusual in the context of mainstream contemporary theories of language—that any account of language should preserve our descriptions of our uses of symbols in general, and language in particular, in everyday life. Such a starting point arises from the conviction that language and meaning are not natural kinds, but symbolic ones—where ‘symbolic kinds’ designates those concepts the extension of which depends on the proper use of symbols that refer to those concepts. On the basis of this supposition, I shall develop a criticism of the widespread conception of language as a set of sentences generated from a set of syntactic and semantic rules and the concomitant conception according to which linguistic competence is tacit knowledge of such syntactic and semantic rules. Given that the criticized conception of linguistic competence underwrites popular accounts of linguistic information and linguistic communication—i.e., popular at least among formal semanticists—, my critique of such conception has also consequences for these accounts. Paramount in this assessment is the idea of incomplete understanding—i.e., that speakers can make correct uses of expressions that they are not (fully) competent with. The idea of incomplete understanding shall play a pivotal role in most of the discussions, not only in my arguments against formal semantics, but in the development of an alternative model of linguistic communication.

The question remains, what conception of linguistic competence allows us to account for this idea of incomplete understanding? How can we account for linguistic information on the face of successful communication despite incomplete understanding? What exactly does the concept of language as a symbolic kind come down to? To address these issues, insights shall be sought by examining some recent accounts of language and meaning. The accounts I have chosen for this purpose are Tomasello’s usage-based account of language, and Brandom’s pragmatic inferentialism. Armed with these insights, I shall finally turn to the presentation of the outline of a theory of language and meaning that meets the criteria of adequacy that I have set for such endeavor.

## A practice-based account of semantics

In this dissertation I contend that semantics, conceived as the study of literal meaning and semantic competence, has to be informed by a theory of practices. The formal semanticist does not see the relevance of a theory of practices in semantics. Moreover, while the formal pragmatist may take account of a theory of practices for her own pragmatic theory, this latter theory is already informed by a semantic theory, which, in turn, is conceived to be prior to, and independent from, a theory of practices. Thus neither formal semanticist nor formal pragmatist attribute relevance to a theory of practices as far as semantics is concerned.

Note that one of the fundamental semantic relations, according to the formal semanticist, is the one between sentences and facts (or states of affairs). Not only is this relation conceived to be derivative from the more fundamental relation of reference, but the above-mentioned facts (or states of affairs) are conceived to be independent from language-use and, in a more fundamental sense, independent from human culture. As opposed to this, I contend that neither is the referential relation fundamental, nor are all facts (or states of affairs) to which language refers independent from language-use and human culture.

Practices need not be reduced to facts—facts and practices have fundamentally different ontological statuses. The formal semanticist, perhaps embracing anti-metaphysical scrupulous that arise from a commitment to ‘explanatory reductionism’,<sup>15</sup> may assume the thesis that practices, if they are to be respectful ontological entities, should be amenable to reduction to facts and, hence, that semantics should be reduced to a relation between sentences and facts. But as long as we are interested in an account of the information carried by language, we can abide by the distinction between natural language metaphysics and metaphysics as such (see the beginning of this introduction); to discuss the former we can, by and large, remain silent about the latter.<sup>16</sup>

I contend that a theory of practices makes essential part of a semantic theory by allowing us to provide a description of the roles that words, expressions, gestures, and symbols (for short *signs*) play in practices. For many signs used in our everyday life, though not all of them, carry information in virtue of these roles.

Thus, I believe that a semantic theory can profitably make use of the following elements:

- (i) A theory of practices. In particular, I will make use of Schatzki’s theory of social practices.

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<sup>15</sup>Explanatory reductionism is the thesis according to which “all genuine explanations must be couched in the terms of physics, and that other explanations, while pragmatically useful, can or should be discarded as knowledge develops” Stoljar (2009).

<sup>16</sup>This is a distinction that at least some formal semanticist subscribe to (see §1.2.2). To be sure, it is true that a particular natural language metaphysics presupposes a particular metaphysics (as such). I will come back to this discussion in the “Final comments,” but a detailed discussion of the ontology of practices is beyond the scope of the present work, and shall remain as a topic for future research.

- (ii) An account of the role that words and expressions play in practices. These roles will be derived from the above-mentioned theory of practices.
- (iii) An account of how these roles underwrite the speaker's ability to comprehend and produce words. Following Schatzki, I will use his notions of world and action intelligibility to propose a notion of language intelligibility. This notion will underwrite the notions of situations of use as well as linguistic understanding.
- (iv) An account of literal meanings. I will develop a somewhat unusual account of literal meanings following the strategy of explaining the meaning of "meaning." I will use my own account of the roles that words play in practices to inquire into what practices there are expressions containing the term "meaning" and exactly what role they play therein. I will argue that these expressions, when they are used, occur inside 'explanatory practices' and have the purpose of establishing a shared understanding (though the use of these expressions is not the only way to seek for a shared understanding).

If my arguments and premises are sound, the idea seems justified that an explanation of the information carried by language requires to take practices into account. Such a picture of linguistic information requires a radically different account of language, linguistic competence, and linguistic communication. To be sure, when looking at the present work in hindsight, it seems that it raises more questions than it provides answers. This should not be seen as a shortcoming. Though rough and general as this account may be at this stage, I believe that it provides us with promising tools to study our 'human world' and our 'human nature', in which language is paramount. I am also convinced that interesting connections can be drawn between my account and the account of others. However, a more informed development of some aspects of these large topics shall remain as a suggestion for future work.

## Chapter contents

This dissertation is divided into four chapters. *Chapter 1* will be devoted to a thorough presentation of the philosophical presuppositions of formal semantics. I will start my discussion by introducing, following Stokhof (2002a), four views of the status of formal semantics. After presenting the characteristics of these views, I will turn to a detailed discussion of some tenets that, at least in practice, are presupposed by the formal semanticist. These tenets are (a) the emphasis on semantic rules and the principle of compositionality; (b) the notions of truth and reference; and (c) the role of intuitions and the conception of semantic competence. In these sections not only will I present the tenets as such, but also suggest why they seem suspicious and why we should be motivated to advance a

closer scrutiny of the view these tenets give rise to. Next, I turn to a thorough discussion of two central issues that created a rupture among formal semanticists with respect to the account of linguistic communication and the nature of the information carried by language. These issues are the distinction between speaker's meaning and literal meaning, and the discussion between contextualism and minimalism. The former issue deals with Grice's contribution to the conceptions of meaning and communication; we will see that such conceptions allow for a distinction between semantic interpretation and pragmatic interpretation, which somehow create a protective belt around the formal semanticist's field of study. Such a protective belt will be discussed in the latter issue, where we will examine in some detail the problems surrounding the contextual dependence of the meaning of (some) expressions.

*Chapter 2* turns around two conflicting perspectives on language, linguistic understanding, and linguistic communication. The assessment of these perspectives starts from the observation that the 'facts' that make up our 'human world', which are expressed by our language and our symbolic means in general, not only consist of 'facts' such as "dogs are mammals," "John whistles," "this is water," etc.; there are also other 'facts' that permeate our everyday life, which are based on our uses of language and signs in general: "I can legally work in the Netherlands," "you are 'it'," "Ronaldinho has gotten a yellow card," etc. These 'facts' are (partly) constituted by our uses of language and signs in general, and hence to understand the expressions that 'refer' to them requires to understand these uses of language and signs in general. As a consequence, the measuring rod with which theoretical accounts of language, understanding, and communication are to be assessed stipulates that our descriptions of our experiences of language-use in everyday life must be preserved. These descriptions are our only way to gain 'access' to the phenomena that gives rise to 'facts' of the latter kind. This chapter contains the main arguments against the formal semanticist's model of information. I present two arguments against this model. The first one attempts to show that the conception of language as an infinite set of sentences generated by a finitely presentable set of rules, as well as the assumption that properties of linguistic competence mirror properties of language, do not meet our descriptions of language-use. If my argument is compelling, the formal semanticist's theme of study becomes undermined, since it is shown to be an artificial discussion that does not address a legitimate phenomenon. The second argument attempts to show that linguistic competence is something completely different from what the formal semanticist assumes it to be. The main concept here is the idea of incomplete understanding. One consequence of this argument is that the notion of linguistic competence put forth by the formal semanticist, closely examined in chapter 1, must be rejected. Next, I take up the challenge to provide an outline of a 'descriptive view' of communication in such a way that it explains the following observations: (a) linguistic communication is more often than not successful; (b) when we successfully communicate we 'share a theme' with our interlocutor—

i.e., we are speaking about the same ‘objects’ and attribute to them the same properties—; and (c) it has to allow for successful communication despite incomplete understanding.

*Chapter 3* contains a review of some theories of language that in one way or another have touched upon the central topics of my positive account, namely Tomasello’s usage-based account of language and Brandom’s pragmatic inferentialism. The choice of these accounts is not completely fortuitous. I examine Tomasello’s usage-based account of language since Tomasello’s account stands out in opposition to the idea that language and its meaning can be studied beforehand, and hence independently of, language-use. Moreover, his account of what information language conveys is connected with the use of language in situations (in particular, with what he calls joint attentional frames), which is concomitant to an alternative conception of linguistic competence that relies on cognitive and social-cognitive skills. Finally, his rich descriptions of empirical facts and such a detailed step-by-step account of the language acquisition process serves as a valuable source of empirical data for any account that intends to carry out an empirical study of language. There are three main reasons why I examine Brandom’s pragmatic inferentialist project. To begin with, Brandom stands out in opposition to the traditional concept of content (information) in semantics, namely, that of the representational approach. More importantly, he opposes to it an account of content based on the role of sentences and subsentential expressions in practices (more precisely, their role in a particular kind of practice). Another reason is that Brandom’s account of understanding leaves room for a discussion of incomplete understanding. Finally, Brandom contends that the kind of practices that confer content (information) on sentences and mental states are fundamentally and irreducibly social.

The first part of *Chapter 4* will be devoted to a discussion of a descriptive view of linguistic competence and literal meanings. The gist of the account is based on the idea that the information carried by many words and expressions used in our everyday life is constituted by the role that they play in practices. I will develop an account of practice-based linguistic information using Schatzki’s (1996) theory of practices, with which I will develop an account of the role that words and expressions play in practices. Next, I will show how these roles underwrite the speaker’s ability to comprehend and produce words, and then develop an account of literal meanings by seeking the meaning of “meaning.” In the second part of the chapter I delve into a discussion as to how, according to the approach of linguistic information developed earlier in the chapter, we can carry out an empirical study of language. The gist of the development is based on the interrelation between practices and individual abilities. The gap between the two will be bridged by appealing to Marr’s famous proposal of the three levels of explanation of an information carrying device.