Models of Language

Towards a practice-based account of information in natural language

Edgar J. Andrade-Lotero

Models of Language

Towards a practice-based account of information in natural language

ILLC Dissertation Series DS-2012-03

INSTITUTE FOR LOGIC, LANGUAGE AND COMPUTATION

For further information about ILLC-publications, please contact

Institute for Logic, Language and Computation
Universiteit van Amsterdam
Science Park 904
1098 XH Amsterdam
phone: +31-20-525 6051
fax: +31-20-525 5206
e-mail: illc@uva.nl
homepage: http://www.illc.uva.nl/

Models of Language

Towards a practice-based account of information in natural language

Academisch Proefschrift

ter verkrijging van de graad van doctor aan de
Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof.dr. D.C. van den Boom
ten overstaan van een door het college voor
promoties ingestelde commissie, in het openbaar
te verdedigen in de Aula der Universiteit
op donderdag 8 maart 2012, te 10.00 uur

door

Edgar Jose Andrade-Lotero

geboren te Bogotá, Colombia.

Promotiecommissie

Promotor:	Prof.dr. M. Stokhof Promotor
Co-promotor:	Prof.dr. M. van Lambalgen Copromotor
Overige leden:	Prof.dr. Rens Bod Committeemember
	Prof.dr. Rob van der Sandt Committeemember
	Prof.dr. Keith Stenning Committeemember
	Prof.dr. Frank Veltman Committeemember
	Dr. Catarina Dutilh Committeemember

Faculteit der Geesteswetenschappen

Cover image: "The first figure" of *Ars Magna et ultima* by Ramon Llull.
Printed and bound by Ipskamp Drukkers

ISBN: 978–958–44–9760-4

to my parents, my brother, my wife, and my beloved son

Contents

Acknowledgments

This thesis is a philosophical work that has not been written by a philosopher. Though educated as a mathematician, I grew more and more passionate about philosophy over the years, yet never did I take a philosophy course. Sometimes I believed, as many of my fellow mathematicians did, that nothing is an academic work worth its salt if it is not formal and rigorous as a mathematical demonstration. Consequently, as I wrote down my first few drafts of a philosophical piece, I pretended to write down a demonstration. Just as many, though not all, of my fellow philosophers, I was under the wrong impression that philosophy ought to be an endeavor of writing down demonstrations. I owe Martin Stokhof the realization that this is not how things work in philosophy, let alone how they ought to. Martin taught me that there is a difference between a demonstration and an argument, and that there can be non-formal yet fully rigorous arguments. Needless to say, these lessons showed me the way to both a more humble and a more clearly structured manner of writing. Having finished my thesis, however, I feel that a long way still lies ahead before I can produce a truly satisfactory philosophical work.

Many people deserve mention for having helped me in the writing of my thesis, either by directly providing feedback, clarification of thoughts through lively discussions, or moral and material support. First of all, my supervisors, Martin Stokhof and Michiel van Lambalgen, who believed that I could live up to their expectations and produce a not completely nonsensical piece with some interesting ideas and arguments in it. I owe to them not only clearing up my blurry ideas, but also the method of study and a tireless love for work (though I still have a tiresome love for procrastination). There are not enough words to thank them for their effort to read my drafts and peel the onion of my ideas. I should also mention my 'non-official supervisor', Catarina Dutilh, who pushed me to improve and clear up my ideas and provided valuable feedback on many of my pieces; we had a very productive collaboration, and she became a very good friend. My fellow students provided a rich and productive environment full of interesting and

challenging discussions and a friendly and human atmosphere; in the hope that I don't forget any of them I dare to give their names here: Erik Rietveld, Chantal Bax, Dora Achourioti, Marc Staudacher, Dimitris Gakis, Inés Crespo, Floris Roelofsen, Tikitu de Jager, and Michael Franke. My friends in Amsterdam, and especially my wife, Juli, provided the moral support and distraction that I needed to complete an enterprise of the magnitude of this thesis. Moreover, Juli not only encouraged me to pursue my philosophical enterprise, but enhanced my academic life as well; we share a passion for books, typography, LaTeX, and some philosophical topics; she also provided a lot of help for the thesis and cover layouts. I should also mention Elli Bleeker, who was extremely kind to help me with the Dutch translation of the abstract.

Finally, I would like to thank the Department of Philosophy and the ILLC, which provided me with the position and hence the material means for my study at the UvA; the ILLC staff for all their cooperation and support, especially Tanja Kasenaar and Peter van Ormondt; and the Universidad del Rosario, for allotting enough time in my work description to finish my thesis.

Bogotá — Edgar J. Andrade-Lotero
January, 2012.

Toward the end of the thirteenth century, Ramón Llull invented the thinking machine. Four hundred years later, Athanasius Kircher, his reader and commentator, invented the magic lantern. (...) The names of both inventions are generous. In reality, in mere lucid reality, the magic lantern is not magical, nor is the mechanism devised my Ramón Llull capable of thinking a single thought, however rudimentary or fallacious. We do not and will never know (it would be risky to await a revelation from the all-knowing machine) how it first came into being. Happily, one of the engravings in the famous Mainz edition (1721-42) affords us room for conjecture. (...) It is a schema or diagram of the attributes of God. The letter A, at the center, signifies the Lord. Along the circumference, the letter B stands for goodness, C for greatness, D for eternity, E for power, F for wisdom, G for volition, H for virtue, I for truth, and K for glory. The nine letters are equidistant from the center, and each is joined to all the others by chords or diagonal lines. The first of these features means that all of theses attributes are inherent; the second, that they are systematically interrelated in such a way as to affirm, with impecable orthodoxy, that glory is eternal or that eternity is glorious; that power is true, glorious, good, great, eternal, powerful, wise, free, and virtuous, or benevolently great, greatly eternal, eternally powerful, powerfully wise, wisely free, freely virtuously truthful, etc., etc. (...) If a mere circle subdivided into nine compartments can give rise to so many combinations, what wonders may we expect from three concentric, manually revolving disks made of wood or metal, each with fifteen or twenty compartments? (...) Let us select a problema at random: the elucidation of the "true" color of a tiger. I give each of Llull's letters the value of a color, I spin the disks, and I decipher that the capricious tiger is blue, yellow, black, white, green, purple, orange, and grey or yellowishly blue, blackly blue, whitely blue, greenly blue, purplishly blue, bluely blue, etc. Adherents of the *Ars magna* remained undaunted in the face of this torrential ambiguity; they recommended the simultaneous deployment of many combinatorial machines, which (according to them) would gradually orient and rectify themselves through "multiplications" and "eliminations." For a long while, many people believed that the certain revelation of all the world's enigmas lay in the patient manipulation of these disks. (...) As an instrument of philosophical investigation, the thinking machine is absurd. It would not be absurd, however, as a literary and poetic device...

Jorge Luis Borges

Ramón Lull's Thinking Machine

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 mainstreams 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.[1] 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.[2]

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.[3]

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—

[1]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)

[2]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.

[3]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[4] is a conglomerate of different formal theories with one goal in common: to study the semantics of natural language[5] 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.

[4]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."

[5]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 FregeâĂŹs 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).[6] 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.[7] 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.[8] 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?

---

[6]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.

[7]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.

[8]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.[9]

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.[10] 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).[11] The sign corresponds to the sequence of 0s and 1s that

[9] But see §3.1 and §3.2.

[10] 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.

[11] "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.[12]

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

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).

[12]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.[13]

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.

[13]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.[14]

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 is worth e 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

[14] 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.

***

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',[15] 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.[16]

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 sings 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.

[15]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).

[16]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 assesment 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.

Chapter 1

Philosophical presuppositions of formal semantics

1.1 The status of formal semantics

Formal semantics is a conglomerate of different formal theories with one goal in common: to study the semantics of natural language by means of logical tools. This common goal, however, is not enough to define the status of formal semantics. The status of a discipline depends on answers to questions such as "What does it study?," "How should this study be conducted?," "What aspects of the theories have a real counterpart?," "What data can be used to confirm or falsify theories?," etc. These questions are rarely raised by formal semanticists, so no straight answer is readily available.

It is not the fact that there are different approaches to the status of formal semantics that is so intriguing, but that formal semanticists hardly ever express what kind of approach they are taking, let alone examine the assumptions they make. Thus, not only do formal semanticists usually appear to be unaware of, or even uninterested in, these assumptions, but also the question of their justification is constantly avoided.[1]

[1] A sort of reason in favor of this 'unexamined stance' which is rather extreme, though not uncommonly used in discussions, is exemplified by Gamut's argument to adopt an intensional model-theoretic approach, as against extensional approaches, which goes as follows: "The intensionalist stream of thought holds that such a position [i.e. that of the extensionalist, such as Quine or Davidson] is inspired too much by purely philosophical motives, and that it pays too little attention to the requirements of an empirically adequate semantic theory of natural language. [...] If our aim is an empirically adequate semantic theory for natural language rather than a semantic theory that meets some independent philosophical constraints, the obvious way to proceed is to use an intensional semantics" (Gamut, 1991, vol. 2, p. 146). What triggers such a claim is a negative appreciation of the distinction between grammatical form and logical form that the extensionalist needs to make in order to account for intensional phenomena in natural language (Thomason, 1974, pp. 41–43). But such an appeal to empirical adequacy, however, must be accompanied by an argument to the effect of showing that a grammatical form plus

1.1.1 Shared assumptions

There are different philosophical assumptions according to each approach. However, there are a number of assumptions shared by all of them:

- Natural language is an infinite object generated by a system of rules. This object can be studied independently of its actual use and its historical development.
- The main purpose of the account is to explain how the meanings of complex expressions are computed from the meanings of their component parts (given a particular context).
- Meanings are objects in their own right. They are real and can be known by everyone.
- Our intuitions about these objects constitute the formal semanticist's domain of study. There are different kinds of intuitions: (i) intuitions about the meanings of subsentential expressions (e.g., about classes of meanings, such as proper names, natural kinds, properties, etc., about indexicals, demonstratives or definite descriptions, and about vagueness); (ii) intuitions about the meanings of sentences (e.g., truth conditions, tautologies, ambiguity, etc.); and (iii) intuitions about relations between the meanings of sentences (e.g., synonymy, entailment, equivalence, etc.). Moreover, the formal semanticist does not make a difference between intuitions about the meanings of *particular* expressions and intuitions that are (informal) *patterns* that the formal semanticist utilizes to organize particular intuitions.[2]
- Finally, while both are competent speakers of a given language, the formal semanticist's intuitions override the layman's intuitions, in the sense that a dispute over the proper interpretation of a given example can be settled on the basis of the formal semanticist's intuitions. The formal semanticist's work does not consist in, or relies on, a statistical analysis of surveys on competent speaker's intuitions.

These assumptions give rise to a number of questions: How can we know an infinite object? If knowledge of language is knowledge of computations of meanings, how can we account for people's mistakes? What kind of object are meanings that people can share intuitions about them? How do people communicate with these objects?

How the above-mentioned assumptions must be interpreted to give answers to these questions, and hence what status the discipline itself is supposed to have, depends on further assumptions. I turn now to a presentation of four different sets

an intensional ontology is more empirically adequate than a logical form plus an extensional ontology.

[2]For examples of such intuitions as patterns see "Why rules?" in §1.2.1 below. See §2.2.2 for discussion.

of assumptions about the status of formal semantics. They are: (i) the deductive science view; (ii) the empirical science view; (iii) the engineering view; and (iv) the instrumentalist view.[3]

1.1.2 The deductive science view

According to the *deductive science view*, formal semantics is a science, but as such it is closer to mathematics than it is to physics. It assumes that language and its meaning are abstract objects, and that the task of the semanticist is to study their structure.[4] The status of language and its meaning is similar to that of the natural numbers, and the explanation of their structure can be given in similar terms, i.e., by providing a formal system.[5] The analogy can be elaborated as follows: the structure of natural numbers is provided (captured, or modeled) by a technical account of them, e.g., von Neumann's set theoretical construction; the structure of natural language and its meaning is provided by a technical account of them, e.g., Montague grammar.[6]

If there is a question at all about the nature of language and meaning, the formal semanticist eschews an answer to it and merely claims that this question has to be answered by, or given in a similar way than the one provided by, the

[3]The first three views are introduced in Stokhof (2002a); the fourth view was suggested to me by Stokhof in personal communication.

[4]Compare the following quote from Thomason's introduction to Montague's papers on formal philosophy: "According to Montague the syntax, semantics, and pragmatics of natural languages are branches of mathematics, not of psychology. The syntax of English, for example, is just as much a part of mathematics as number theory or geometry. [...] This mathematical conception of semiotics does not imply that data are irrelevant to, for instance, the syntax of English. Just as mathematicians refer to intuitions about points and lines in establishing a geometrical theory, we may refer to intuitions about sentences, noun phrases, subordinate clauses, and the like in establishing a grammar of English. But this conception does presuppose agreement among theoreticians on the intuitions, and it renders statistical evidence about, say, the reactions of a sample of native speakers to "Mary is been by my mother" just as irrelevant to syntax as evidence about their reactions to "7+5=22" would be to number theory" (Thomason, 1974, p. 2).

[5]There has been some debate recently whether an explanation of a phenomenon can consists only of a mathematical system; some argue that, e.g., in physical explanations, an account should also be given of the causal connection between the entities involved in the phenomenon of interest. What is interesting from this observation is that almost no attention has been given to the need for scientific explanations to have such extra-mathematical element (e.g., well-entrenched explanations in physics, such as Newton's account of the elliptical shape of planetary orbits in terms of the inverse-square law of gravitation, do not account for the causal connection between the elements involved in the phenomenon). For discussion, see Mancosu (2011).

[6]Compare the following quote from Montague: "There is in my opinion no important theoretical difference between natural languages and the artificial languages of logicians; indeed, I consider it possible to comprehend the syntax and semantics of both kinds of languages within a single natural and mathematically precise theory. On this point I differ from a number of philosophers, but agree, I believe, with Chomsky and his associates" (Montague, 1974b, p. 222).

philosopher of mathematics. The question about how we understand linguistic expressions receives an answer along the same lines: to understand an expression is similar to understanding an equation relating natural numbers, and both problems should be deferred to the philosopher of mathematics.

Montague claims that "there is no important theoretical difference between natural languages and the artificial languages of logicians" (Montague, 1974b, p. 222), and the idea that the task of the semanticist is to study the structure of natural language by providing a formal language and its formal interpretation is based on this claim. However, that there is no such difference is no more than an assumption, and as such it has to be justified in the face of the intuitive differences between natural language and formal language. On the one hand, natural language can be learned as a first language; it has different stages of ontogenetic and historical development; it can be used in myriad ways. On the other hand, formal language cannot be learned as a first language; it is created for certain specific purposes; it is completely regimented; when it changes over time such a change is not driven by intrinsic processes; it is used only in some specialized disciplines, such as mathematics or science; it cannot be used to communicate in isolation of natural language.

Now, even if we agreed that natural language shares the same status as the set of natural numbers, there is still the task of saying what the difference between concrete natural languages consists in and why the formal version of English is a version of English and not of French or what have you. However, this can only be done by appealing to a pre-theoretical notion of English, about which the deductive science has said nothing. For all we know, we could be studying the language of a community of extraterrestrials. But why and how is this sort of study important for our myriad natural languages?

It could be claimed that what formal semantics studies is the common core of all syntactic and semantic systems underlying all logically possible languages. But this answer is far from being satisfactory. For one thing, that the language of an extraterrestrial community shares the same core than our myriad languages, or even that there is a common core to our myriad languages, must be established by an empirical study, and not assumed by fiat.

Answers to questions such as "What is linguistic understanding?," "How do we communicate with language?," and "How do we acquire one?," are no more than a promissory note. This can be but a starting point, and this is how it is usually taken. In fact, many formal semanticists who recognize themselves as part of the deductive science view, when asked the above-mentioned questions take on the position of the empirical science view, which addresses such issues and to which we will turn in a moment. Some others still resist moving in that direction, but they do not seem to be interested in delivering answers to the above-mentioned demands.[7]

[7]Compare Janssen's (1997, p. 446) acceptance of the distinction between a theory of natural language semantics and a theory of linguistic understanding.

1.1.3 The empirical science view

The *empirical science view* is widely accepted among formal semanticists, though of course there are exceptions. It is in line with the idea that formal semantics is a scientific enterprise within the field of linguistics.[8] When referring to linguistics, however, these formal semanticists have in mind *Chomskyan* linguistics. Accordingly, some of them see their enterprise as an extension of Chomskyan linguistics. This point is important because it shows what kind of assumptions about language are imported into the discipline.[9] It is worth noting in passing that a great number of formal semanticists make these assumptions only in practice, and only rarely do they make them explicit.

In addition to the shared assumptions, the main assumptions of the empirical science view are:

- Formal semantics is the empirical study of semantic competence. Semantic competence, as well as the entire linguistic competence, is individual and shared. That is, an individual can have complete knowledge of language, and such a knowledge is shared among the competent speakers of the same linguistic community.

[8]Compare the following quote from Dowty's, Wall's & Peter's *Introduction to Montague Semantics* (1981): "There is no doubt that semantics has a somewhat more abstract character than does syntax or phonology. Semantics, after all, deals with such notoriously slippery entities as "meanings," and this fact sometimes leads people to assume that it must be approached in ways that are quite unlike those used in the study of other components of grammar. We would contend, however, that there is no reason in principle to regard the problems of theory construction and testing in semantics as significantly different from the corresponding enterprises in other domains of linguistics. [...] In constructing the semantic component of grammar, we are attempting to account not for speaker's judgements of grammaticality, grammatical relations, etc. but for their judgements of synonymy, entailment, contradiction, and so on. [...] Furthermore, in semantics, just as in syntax, we require our theory to provide *principled* explanations for the facts, i.e., explanations that emerge from a tightly interconnected system of general statements and which lead to further predictions about as yet undiscovered facts. The theory must also be capable of being joined in a plausible way with theories of related domains" (Dowty et al., 1981, pp. 1–3, emphasis in the original).

[9]Compare the following quote from Chierchia's and McConnell-Ginet's *Meaning and Grammar* (2000): "Our approach to semantics lies in the generative tradition in the sense that it adopts the three key ideas sketched above: (1) that generative grammars of formal (artificial) languages are models of the grammars of natural languages, (2) which are realized in human minds as cognitive systems (3) that are distinct from the directly observable human linguistic behavior they help to explain. [...] As our adoption of the generative paradigm implies, we take linguistics to include not only the study of languages and their interpretations as abstract systems but also the study of how such systems are represented in human minds and used by human agents to express their thoughts and communicate with others" (Chierchia and McConnell-Ginet, 2000, pp. 2, 3, 5). Similar approaches to formal semantics that could also be classified within the empirical science view are Heim and Kratzer (1998); de Swart (1998); Borg (2004); Cappelen and Lepore (2005a); and Schiffer (2006).

- Semantic intuitions are hard empirical data and are independent from the semantic theories that explain them. Theories can be confirmed or falsified by these semantic intuitions.
- Theories have real counterparts in the minds of competent speakers. These real counterparts underly linguistic behavior in the sense that behavior is partly caused by it.

1.1.4 The engineering view

Formal theories of language, according to the engineering view, are directed at providing suitable tools to serve various purposes, e.g., query systems, translation systems, etc. These theories, however, are not concerned with the mechanisms that control correct comprehension and production of language, nor with what correct comprehension or production as such consists in. What a formal theory has to achieve is to match the right input-output conditions, but the implementation of these input-output conditions (procedural algorithms, artificial neural networks, etc.) depends only on the relevance or efficiency with respect to the task at hand. More importantly, the right input-output conditions to be matched by these theories are assumed to be given beforehand (e.g., by a human designer, expert, or even another theory of meaning). Thus, the formal semanticist that endorses this view eschews any substantive claim as to how his or her own findings bear on linguistic competence, understanding, communication, acquisition, and, *a fortiori*, on the nature of language itself.

1.1.5 The instrumentalist view

Last but not least, according to the instrumentalist view, the interpreted formal languages put forth by the semanticist are merely theoretical tools for classifying, systematizing and predicting semantic intuitions (e.g., truth conditions, validity of certain inferences, etc.). Hence, interpreted formal languages do not provide the genuine content of semantics. In some sense, this view is an extension of the engineering view, since a formal semanticist that embraces the former view is only interested in the input-output conditions. But she goes beyond the engineering view in the sense that her formal languages seek to explain and predict these input-output conditions, and not merely take them for granted as a follower of the engineering view would do. The instrumentalist view, like the empirical science view, is a popular view. One can often see formal semanticists discussing whether a given particular formal language captures a given data, which usually consists of a list of sentences, their respective truth values and/or entailment relations among them. They usually claim that a formal language is better than a previous one because it captures the same kind of data and more. A follower of the instrumentalist view, however, does not go as far as a follower of the empirical

science view, since the former does not contend that formal languages represent an empirical reality in the mind of competent speakers.

***

According to the previous classification, the only position that is concerned with an empirical study of language is the empirical science view. By an empirical study of language we mean a study of linguistic competence—i.e., the abilities that underwrite production and comprehension of language—and of the role that the notion of literal meaning plays in our life. The other three approaches to the status of formal semantics assume that such an empirical study does not concern them. Moreover, the deductive science view and the engineering view assume that the question as to how the semantic rules that they deal with have empirical import can be addressed, in a satisfactory way for their own purposes, by other disciplines. By contrast, the instrumentalist view does not see any need to rise the question as to the empirical import of these semantic rules. But since it is the empirical study of language that interests us here, we will focus only on the empirical science view in what follows. I will come back to a criticism that concerns the instrumentalist view more directly in the "Final comments."

1.2 Main tenets of formal semantics

1.2.1 Semantic rules and compositionality

The main achievement

The formal semanticist claims to have achieved a model of the way in which the meanings of complex expressions, in particular, sentences, depend on the meanings of their constituents. To take a very simple example, "Theaetetus", i.e., a proper name, is considered to stand for an entity in the world; while the linguistic expression "flies", i.e., a verb, stands for a property; the sentence "Theaetetus flies" then stands for the proposition that is true if and only if the entity referred to by "Theaetetus" is part of the extension of the property referred to by "flies."

It is important to point out the extreme simplicity of the previous example (some more complex examples will be discussed in §1.4.1). All the more since most of the rhetorical force mustered by the formal semanticist lies in the complexity of her examples. However, the point remains that the philosophical gist of the formal semanticist's accomplishment is nothing over and above what the simple "Theaetetus" example can provide.[10]

[10]To put it another way, most of the problems discussed by different schools in formal semantics are not proper philosophical problems, or at least they are not problems that have to do

In its crudest version, the things the formal semanticist would like to know about the meaning of "Theaetetus" are *not* its actual referent, how the expression came to have that referent, or how people manage to associate the expression "Theaetetus" with Theaetetus. The important things are: (i) the different kinds of entities that expressions in language refer to, e.g., entities, properties, etc.—i.e., semantic categories; and (ii) how these kinds can be used to yield the meanings of complex expressions. The formal semanticist is not concerned with the analysis of the meaning of the sentence "Theaetetus flies" as such, but only with the way its (structural, see below) meaning depends on the (structural) meanings of "Theaetetus" and "flies."

Semantic rules and understanding

Semantic rules are defined on semantic categories of expressions, which constitute the *structural*, or *formal*, meanings of these expressions, not on the 'full' meaning of individual expressions, which constitute their *lexical* meanings. According to this distinction, different (non-synonymous) expressions receive different lexical meanings, although they could belong to the same semantic category and thus have the same structural meaning.

Semantic rules are, as it were, 'blind' to lexical meanings. It is worth noting that this property of semantic rules is valid even if we allow for semantic sub-categorization, that is, if we split up a category into different sub-categories that have different semantic properties. For instance, Montague distinguishes, by means of "meaning postulates," between intensional and extensional transitive verbs, e.g., "seek" and "kiss," respectively. The point remains that these sub-categories do not determine the 'full' meaning of individual expressions. Semantic rules, even if dependent on sub-categories, are 'blind' to lexical meanings.

The formal semanticist maintains the conviction that natural languages are like formal languages in the sense that both are sets of abstract syntactic and semantic rules. However, she usually claims (or should claim if she is to attribute empirical relevance to her own task) that these semantic rules account for the *compositional structure of linguistic competence* (my terms), according to which linguistic competence, as far as concerns the formal semanticist, comes down to knowledge of (a finitely representable) set of syntactic and semantic rules that generate all meaningful sentences of the language.[11]

---

with an empirical study of language, but are rather theory-internal affairs. For instance, most of the discussion surrounding the so-called "donkey sentences" (Groenendijk and Stokhof, 1991) only arises if one accepts the supposition that the meanings of sentences are to be represented in the language of first-order logic. In my view, a proper philosophical issue is the question why can the meanings of sentences be represented in the language of first-order logic? Why is it fruitful to do so as far as an empirical study of language is concerned?

[11]Davidson (1967) claims that "It is conceded by most philosophers of language, and recently by some linguists, that a satisfactory theory of meaning must give an account of how the meanings of sentences depend on the meanings of words. Unless such an account could be

The formal semanticist's thesis about linguistic understanding: A understands a sentence S in a language L if and only if A knows the rules of generation of the literal meaning of S in L.

The thesis has the form of a *definition* of linguistic understanding. However, it is no more than a *theoretical explanation*, all the more if formal semantics is conceived as an empirical science. The thesis deals with three elements: (i) a pre-theoretical notion[12] of linguistic understanding mentioned in the left-hand side; (ii) an articulation of theoretical concepts presented in the right-hand side (i.e., the identification of a language as a set of rules, the reification of literal meaning, the stipulation that a literal meaning is generated by the rules of language, and the appeal to a relation between the subject and such rules of language); and (iii) a relation between the two, namely, that the articulation of theoretical concepts captures (explains, or models) the pre-theoretical, informal notion.

Though important as it is to provide an independent characterization of the pre-theorical notion of linguistic understanding, if there is such a notion, I shall not dwell into this issue until chapter 2. Moreover, I must mention upfront that a full-fledged defense and characterization of a pre-theoretical notion of linguistic

supplied for a particular language, it is argued, there would be no explaining the fact that we can learn the language: no explaining the fact that, on mastering a finite vocabulary and a finitely stated set of rules, we are prepared to produce and to understand any of a potential infinitude of sentences. I do not dispute these vague claims, in which I sense more than a kernel of truth. Instead I want to ask what it is for a theory to give an account of the kind adumbrated" (quoted from Davidson, 1984b, p. 16). Chierchia and McConnell-Ginet (2000), when discussing some general properties of semantic competence, claim (p. 7): "Whatever linguistic meaning is like, there must be some sort of compositional account of the interpretation of complex expressions as composed or constructed from the interpretations of their parts and thus ultimately from the interpretations of the (finitely many) simple expressions contained in them and of the syntactic structures in which they occur." Moreover, Ema Borg, in her *Minimal Semanitcs* (2004, p. 56) claims: "The best explanation for the generative nature of our linguistic understanding seems to be that the meaning of complex wholes must be determined by the meanings of their parts and their mode of composition. For if this is the case, then it is no mystery why our understanding of complex linguistic items has an indefinite range."

[12]It is worth explaining how I shall understand the terms "pre-theoretical" and "informal" here, as far as a qualification of notions (or concepts) is concerned. To begin with, "pre-theoretical" is a qualification that is properly applied to a notion as it is used in everyday expressions, in everyday situations. Since these everyday expressions are neutral (and prior) as regards (philosophical or otherwise) theories that use the notion, the term "pre-theoretical" seems adequate. To be sure, it might be contentious what counts as an everyday expression or an everyday situation. Moreover, notions could appear in expressions in such a way as to doubt that there is a unique way to characterize all these different expressions. We then might feel inclined to say that we had better stick to a characterization of the notion, though informal as it might be, in order to make progress. Such a feeling, however, must not blind us to the pre-theoretical notion; rather, we had better find better ways to deal with it and the 'fuzziness' of the expressions it is used in. Now, the qualification "informal" applies over theoretical notions, and qualifies the kind of tools that are used to define them. In other words, "informal" notions are already couched on a significant amount of theorizing, albeit of the 'informal' kind.

understanding is beyond the scope of the present work. A characterization of linguistic understanding, different from the one provided by the formal semanticist's thesis, will be sought in chapters 2 and 3 and developed in more detail in chapter 4.

Why rules?

That a compositional structure of linguistic competence must exist is the conclusion that some philosophers of language have reached on the face of a number of (purported) intuitions, namely, systematicity, the infinity of language, and productivity.

The claim of systematicity can be formulated as follows: "[T]he ability to produce/understand some sentences is intrinsically connected to the ability to produce/understand certain others. [...] You don't, for example, find native speakers who know how to say [...] that John loves the girl but don't know how to say [...] that the girl loves John" (Fodor and Phylyshyn, 1988, p. 37).[13] The arguments from systematicity are a sort of 'sufficient reason' to account for certain 'facts' of linguistic understanding. These arguments have the following form. Premise 1: meaningful sentences are generated by semantic rules, and linguistic competence comes down to knowledge of (a finite presentation of) these rules; Premise 2: "John" is an expression of the same semantic category as "the girl" and the competent speaker understands "John loves the girl"; Conclusion: the competent speaker understands "John loves John," "the girl loves John," "the girl loves the girl."

Furthermore, the claim that languages are infinite sets of sentences has also been used as an argument for the 'compositional structure of linguistic competence'.[14] The schematic form of this argument is the following. Premise 1: there are infinitely many grammatical sentences; Premise 2: human understanding is

[13]Compare also Borg's claim that "our linguistic understanding is systematic: the grasp of the meaning of a whole sentence seems to be systematically related to the grasp of the meaning of its parts. Thus, among agents with a normal linguistic competence, if someone understands the sentence 'Bill loves Jill' they will also understand the sentence 'Jill loves Bill'. Yet again no theory which simply pairs sentences with their meanings will be able to predict or explain this systematicity of linguistic understanding. These properties of systematicity and productivity seem to point to a key fact about linguistic meaning, namely that it is compositional. That is to say, the meanings of complex linguistic items, like sentences, are a function of the meanings of their parts together with the mode of composition of those parts. It is this property which explains the fact that our understanding of meaning is productive and systematic" (Borg, 2004, p. 21).

[14]Compare: "The fact that anyone who has a mastery of any given language is able to understand an infinity of sentences of that language, an infinity which is, of course, principally composed of sentences which he has never heard before [...] can hardly be explained otherwise than by supposing that each speaker has an implicit grasp of a number of general principles governing the use in sentences of words of the language" (Dummett, 1978, p. 451, emphasis added). Compare also: "When we can regard the meaning of each sentence as a function of a finite number of features of the sentence, we have an insight not only into what there

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.

Finally, the third intuition has been called 'productivity'. There are several claims of productivity. One claim of productivity consists in that there are words or expressions that can be iterated within some sentences over and over again, in such a way that if someone understands the initial sentence, she will also understand the more complicated one. This intuition has been used to support the claim that languages are infinite sets of sentences. However, it has also been used as an argument for the 'compositional structure of linguistic competence' on its own right. This argument is also a sort of 'sufficient reason', similar to the argument from systematicity. It has the following form. Premise 1: sentences are generated by means of rules, some of which are recursive. Premise 2: linguistic competence is (tacit) knowledge of (a finite presentation of) a set of rules. Conclusion: the agent who is capable of understanding or producing the initial sentence will also be in a position to understand or produce the more complicated linguistic item. Another claim of productivity, also known as 'creativity', consists in that we are able to understand sentences that we have not heard before. The best way to explain this second claim, or so it is argued, is that our linguistic competence is knowledge of rules, which are able to generate an unbounded supply of sentences.[15]

While it is usually taken for granted that these 'intuitions' are hard facts, such a status has not gone unchallenged in the literature. The main qualm that motivates the criticisms is that these 'intuitions' are not independent from a prior theoretical conception of linguistic competence. I will come back to a detailed presentation of these criticisms in chapter 2.

Compositionality as a methodology

We have said that the main achievement of the formal semanticist is to show how the meanings of complex expressions depend on the meanings of their components and their modes of composition. One of the main bones of contention between the different accounts in formal semantics is whether there is something else,

is to be learned; we also understand how an infinite aptitude can be encompassed by finite accomplishments" Davidson (1965), (quoted from Davidson, 1984b, p. 8).

[15]Compare: "We have no trouble whatsoever in grasping the meaning of sentences even if we have never encountered them before. [...] How is this feat possible? The experience of understanding a newly encountered sentence [...] seems much like the experience of adding two numbers we have never summed before. [...] We can do the sum [...] because we know something about numbers and have an algorithm or rule for adding them together. By the same token, we presumably understand a sentence [...] because we know what the single words in it mean [...] and we have an algorithm of some kind for combining them" (Chierchia and McConnell-Ginet, 2000, pp. 6f).

besides the meaning of the components of a complex expression and their mode of composition, on which the literal meaning of the complex expression depends. To deny that there is something else is to make a commitment to what has been called the *principle of compositionality*.

The principle of compositionality deals with syntax and semantics: syntax establishes which are the parts of a sentences (in particular, what categories the words in the sentence belong to); semantics establishes what the combination of the meanings of the parts consists in in order to produce the meaning of the sentence.

While she pretends that her achievement shows how the meanings of sentences depend on the meanings of their parts, and that this achievement explains her 'intuitions' about linguistic understanding, the formal semanticist claims that the principle of compositionality is not an empirical principle, but a methodological one. This means, among other things, that only if we are given a syntax and a semantics can we actually test whether the principle holds or not.[16] But of course, if the test is in the negative, one can always go on and try a different way to formulate the principle, or try a different way to analyze the data, in such a way that a compositional alternative is available.

There are interesting results in this regard. For instance, Janssen (1997, §9.3) shows that with a sufficiently rich syntax the principle can always be validated. And Zadrozny (1995) shows that with a sufficiently rich semantics the principle can always be validated.[17]

The principle of compositionality is just a methodology that advises how to construct semantic theories. The reasons that motivate this methodology are related to the (purported) technical advantages over non-compositional alternatives.[18] More importantly, it seems motivated by the fact that the logical tools, namely, interpreted formal languages, comply, in their most part, with it.[19] The

[16]Compare: "... the principle can be made precise only in conjunction with an explicit theory of meaning and of syntax, together with a fuller speciïňĄcation of what is required by the relation 'is a function of'. If the syntax is sufficiently unconstrained and meanings are sufficiently rich, there seems no doubt that natural languages can be described compositionally. Challenges to the principle generally involve either explicit or implicit arguments to the effect that it conïňĆicts with other well-motivated constraints ..." (Partee, 1984a, p. 281). See also Janssen (1997); Groenendijk and Stokhof (2005).

[17]See also Hodges (2001) for discussion how to extend compositional grammars preserving compositionality. These results have given rise to the claim that compositionality is a 'vacuous' principle, see Westerståhl (1998); Kazmi and Pelletier (1998); Lappin and Zadrozny (2000).

[18]"Compositionality is not a formal restriction on what can be achieved, but a methodology on how to proceed. The discussions in this chapter have pointed to several advantages of this methodology, in particular its heuristic value. It suggests solutions to semantic problems. It helps to find weak spots in non-compositional proposals; such proposals have a risk of being defective. Cases where an initially non-compositional proposal was turned into a compositional one, the analysis improved considerably" (Janssen, 1997, p. 461).

[19]However, the principle of compositionality seems to be motivated by the arguments in favor of a 'compositional structure of linguistic competence' sketched above, as well as by some ways

outcome is that the notion of semantics and, *a fortiori*, the notion of meaning, are conceived as theoretical notions. But then, what does "knowledge of meaning" consist in? How do these theoretical notions help us carry out an empirical study of linguistic competence?

1.2.2 Truth and reference

Reference as the fundamental notion

A very important and central 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.

This emphasis on the relation between language and world sets formal semantics apart from other theories of meaning, such as semantics within generative grammar (e.g., Katz and Fodor, 1963), which conceives the meanings of words as the contents of consciousness (or mental contents).[20]

The relation between language and world becomes more important when it is, often implicitly, accompanied by another claim, namely, that of *universalism*, according to which formal semantics does not study how a particular natural language works, but "what underlies the possibility of any language to express meaning."[21] The formal semanticist claims (or rather, assumes) that the relation between language and world is what underlies this possibility.

Once again following in Frege's footsteps, the formal semanticist assumes that meanings explain the following interrelated observations: that one can understand a sentence without knowing whether it is true or not; and that one gains knowledge by knowing that the sentence is true (or not). Meanings explain these observations in the following way: to understand a sentence is to grasp its meaning. Furthermore, whether a sentence is true or not depends on the meaning of

in which we sometimes talk. For instance, the mother complaining to her child by saying "What part of 'Stop making that annoying noise' did you not understand?". For more discussion see §2.1.2.

[20]The two approaches are usually called *platonism* and *conceptualism* (cf. Gamut 1991, vol. 2, pp. 3f; Chierchia and McConnell-Ginet 2000, pp. 53f). Though some formal semanticists subscribe to conceptualism, e.g., Hans Kamp or Barbara Partee, they still accept that the notion of truth-conditions has a central role to play.

[21]See Kamp and Stokhof (2008, p. 58). The development of formal semantics, as it is conceived from within Kamp and Stokhof (2008), is divided in two general stages. In the first stage, in which a particular interpretation of Frege's work is central, the notion of meaning goes from a "thick" notion, which encompasses the content of a judgment, the act of judging, and the grounds of the judgment, to a "thin" notion of meaning grounded in the most abstract notion of reference. This is followed by a stage of "reinstating content," where the context, the users, and the world, come back into play within the notion of meaning.

the sentence and how the world is. Hence, if one already understands the sentence S, to gain knowledge that S is true (or false) is to gain knowledge as to how the world is.[22]

Information and meaning

In formal semantics, or at least in some communities within this field, an emphasis is made on the concept of information, and the notion of meaning has become subservient to it. Information is, as it were, in between understanding and knowledge. If one grasps the information provided by a sentence S in a given context, it is presupposed that one already understands S. But the information provided by S in a given context goes beyond understanding. For the fact that someone says that S might, in some circumstances, lead one to believe that the world is as described by S. Information, however, does not amount to knowledge, since S might in fact be false, which entails that the information carried by S is false, and hence that the interlocutor is mistaken (or lying).

Frege conceived the process of gaining knowledge as dealing with individual sentences. Nowadays, the process of gaining information is conceived as dealing with a discursive exchange, which consists, among other things, of a sequence of sentences. Sentences carry information, but what information they carry, and the cognitive gain they bring about, depends on the contingent information state that the agent is in at any given point in the exchange. Moreover, this state of information is conceived to develop as the exchange continues.

A fashionable way to represent (truth-evaluable) information, though not the only one, is by means of possible worlds.[23] Whatever possible worlds are, they embody a notion of non-mental, extra-linguistic entities that nonetheless are 'real' in the sense that they are 'entities' similar to the world. Possible worlds are supposed to represent epistemic alternatives of a cognitive agent.[24] An *information state* is defined as a set of possible worlds, and it represents the epistemic alternatives that are compatible with the agent's partial and fallible information that is currently at the agent's disposal. Eliminating an alternative from an information state—i.e., taking out one world from the set of possible worlds—increases the information carried by the state (i.e., there will be more sentences that are either true or false in every possible world in the set). False information is conceived as the information carried by a state that does not contain the actual world.[25]

[22]See Salmon (1982, ch. 1) for a standard presentation and discussion of the roles of Frege's notion of sense.

[23]Other ways to represent information in formal semantics are, for instance, in terms of "Discourse Representation Structures" (see Kamp and Reyle, 1993), or ordered pairs of assignment functions (see Groenendijk and Stokhof, 1991). See also Kamp and Stokhof (2008).

[24]The classical formulation of this idea can be found in Hintikka (1962).

[25]The standard formalism was developed and defended in Stalnaker (1987, 1999a). See also Groenendijk and Stokhof (1999).

The notion of meaning is connected to the notion of information in different ways by different theories in formal semantics. For instance, Stalnaker (1987, 1999a) identifies the meanings of sentences with propositions, where propositions are functions from possible worlds to truth values. Information is carried by contexts, where contexts are sets of possible worlds. The process of information exchange is conceived as the modification of the context by adding to it the content of the sentence asserted. In dynamic semantics, on the other hand, a dynamic notion of meaning is defended, according to which the meaning of a sentence is conceived as its "context change potential," where the notion of a context, according to this approach, is richer than just a set of possible worlds.[26]

I will discuss the notion of context and the issue of context dependence in more detail in §1.4. But it is important to note here that the analysis of the cases where the same sentence carries different information in different contexts is guided by the principle that these differences should be explained by reference to the meaning of the sentence. That is, the meaning of a sentence is supposed to remain constant across different contexts, and it is taken to be what explains this information change across contexts.

It is worth noting, to bring this presentation of the notion of information to a close, that having partial information at one's disposal does not amount to 'incompletely understanding' a (some) sentence(s). In this approach, to be in any information state presupposes that the agent can conceive every possible state of affairs, and that she understands every sentence in the language. The claim that an information state is partial means that the agent is not in an epistemic relation to some states of affairs—e.g., she does not believe that some states of affairs are true and does not believe that they are false—, but all the while she is is perfectly able to conceive them (because each possible world in the information state contains this state of affairs or its negation). Hence, this approach to the notion of information does not leave room for the idea that an agent can have incomplete understanding of sentences. I will argue in chapter 2 against this feature of the formal semanticist's approach.

Metaphysics and natural language metaphysics

An argument given by some influent formal semanticists to introduce in the metalanguage intensional notions, such as possible worlds, is the following. It has been claimed against philosophers such as Quine and Davidson, who deemed that intensional notions are 'obscure' and 'unexplanatory', that if the aim of formal semantics "is an empirically adequate semantic theory for natural language

[26]See Groenendijk and Stokhof (1999) for a clear formulation of this idea. See Stalnaker (1998) and Kamp and Stokhof (2008) for discussion.

Other types of sentences can also be given meanings in terms of information. The meaning of interrogative sentences, for instance, can be represented in terms of the information they request—or, in a more technical way, in terms of the information that counts as a true answer.

rather than a semantic theory that meets some independent philosophical constraints, the obvious way to proceed is to use an intensional semantics" (Gamut, 1991, vol. 2, pp. 145f).

Part of the reason behind this attitude is that a distinction can be made between studying metaphysics and studying *natural language metaphysics*:

> This distinction comes to the fore when one wants to discriminate between the ontology some speaker subscribes to *per se* and the ontology his language presupposes. The two may coincide, but then they also may be distinct. That there is at least a possible gap between the two is obvious. For example, it seems that natural languages such as English presuppose a rather rich ontology, one that acknowledges not just material objects but also abstract objects, such as events, properties, propositions, intentions, beliefs, desires, and so on. Now someone might very well be of an ontologically parsimonious inclination and still use English. He might even use English with its rich ontology to argue for a more nominalistic position and in doing so make use of the very kinds of entities that English presupposes and he wants to do away with (Stokhof, 2002b, p. 107).

This distinction between metaphysics and natural language metaphysics entails that we as theorists are not necessarily making metaphysical commitments when we take at face value the ontology presupposed by natural language. Thus, we cannot invoke (reductive) physicalist scrupulous to determine by fiat what language refers to or what our theories can make use of.

The methodological attitude suggested by the formal semanticist here is two fold: even if her theories make use of intensional entities, she, as a theorist, need not address the issue of the existence of these entities—e.g., whether they are physical, mental, or otherwise—; and the value of these entities is given by their power to help construct empirically adequate semantic theories.

1.2.3 Intuitions and individual linguistic competence

Independence from language-use

The formal semanticist imports the concept of semantics from the field of semiotics, usually by referring to Charles Morris' *Foundations of the Theory of Signs* (1938). According to this division, the core notion of semantics is the "relation between expressions and the objects to which they refer."

In accordance with Frege's (1948) distinction between sense and reference, most formal semanticists claim that language does nor refer directly to objects in the world; the language-world relation is indirect and is factored into a relation between symbols and meanings, and a relation between meanings and objects in the world. The entities on which the symbols of the language are mapped (meanings) are said to be independent from language because they do not depend on whoever uses the language or on the circumstances of their use. The definition

of the syntax-semantics mapping, as the connection between symbols and meanings is sometimes called, does not take into account the fact that a language is used in communication, let alone that it is used in myriad ways in many different everyday activities.[27]

The connection between language and speakers requires separate attention, and is sometimes referred to as the use-relation. Knowledge of language is equated with the ability to use a language, but the formal semanticist claims that the task of describing what is involved in knowing a language is divided into two subtasks. One task is to study language as an object on its own, without taking into account its history or use. The second task is to study the relation between language and language-users.[28] Note that this division only follows from the assumption that a language is an (abstract) object that can exist and be studied independently from the use that people make of it.

Competence vs. performance

The formal semanticist considers that certain aspects of natural language are theoretically irrelevant for her own study: individual differences, limited resources, and observed (logical) inconsistencies, both in production and understanding, can be abstracted away since they are 'external' to the concept of knowledge of language.

By means of example, take the claim that linguistic competence is 'productive'. This claim asserts that "elements within a sentence can be iterated time and time again, to produce more and more complex sentences, but the agent who is capable of understanding or producing the initial sentence will also be in a position to understand or produce the more complicated linguistic item" (Borg, 2004, p. 12). The claim of 'productivity' comes with a qualification: "The claim has to be that the agent will be *in a position* to produce or comprehend the iterated sentence, since, at some point of iteration, the agent may no longer actually be able to comprehend/produce the sentence. For instance, given too great a number of iterations the agent may run out of time or memory for processing the sentence;

[27]Compare the following quote from Gamut: "There is a family of theories of meaning which all start out from the following principle: meaning is a relation between the symbols of a language and certain entities which are independent of that language. These theories may collectively be designated as *correspondence theories of meaning*. The "independence" of the entities in the above means, among other things, that the postulated entities are independent of whoever is using the language in question and of the circumstances under which it is used" (Gamut, 1991, vol. 2, p. 3).

[28]Compare: "To know a language is to *use*, or be able to use, it—to know how to speak it and to be able to understand what others are saying when they speak it. Now, a language is an abstract object that may or may not be used by anyone (think of Esperanto), so the task of saying in what knowledge of a language consists divides into two subtasks: first, the task of saying what a language is, and second, the task of saying what relation a person must bear to a language in order for that language to be a language the person uses, or is at least able to use" (Schiffer, 2006, p. 275, emphasis in the original).

however, the claim is that this limitation emerges from features external to the agent's linguistic competence itself" (*Ibid.*, fn. 7).

The formal semanticist appeals to the well-known distinction between competence and performance, introduced by Chomsky in his quarrel against behaviorism (see, e.g., Chomsky, 1959, 1965; Barber, 2009). According to Chomsky, " '[c]ompetence' [...] is to be interpreted as picking out a hypothetical body of unconscious knowledge that plays a role in but is not exhausted by its possessor's linguistic performance. This knowledge is embodied in a discrete language faculty, a component of the human brain" (Barber 2009; see also Chomsky 1965, p. 4).

Chomsky appeals to three reasons to posit such a hypothetical body of knowledge, and to claim that this is the empirical domain of linguistics. Firstly, against the background of the quarrel with behaviorism, it seems pointless to Chomsky to try and predict linguistic behavior, for it is bound to fail (given the effect of our free and rational decisions). Purportedly, we must confine ourselves, if we are to pursue scientific investigation, to the study of the capacities and activities of the human brain (see, e.g., Chomsky, 1959, §XI). Secondly, Chomsky brings to the fore the question as to the explanation of the case of people who lost their speech because severe, though specific, brain damage, but that suddenly heal and regain their speech with no apparent re-learning of their language. Such situations must be explained, or so Chomsky claims, by positing a factor that remained constant throughout both periods of this person's health (i.e., sickness and rehealing), viz., her linguistic competence. What this person lost was her ability to perform, but her competence remained intact (see, e.g., Chomsky, 1986, p. 9). Thirdly, Chomsky claims that to posit this notion of competence is in accordance with "self-justified" scientific practice, because scientific models can abstract away from "insignificant variation" (see, e.g., Chomsky, 1995, p. 7).[29]

Intuitions and 'bodyless' individuality

The empirical domain of formal semantics is supposed to consist of competent speakers' grasp of the information carried by natural language. This information is attached to words and, through rules of composition, to sentences. The formal semanticist assumes that competent speakers have intuitions about this 'fact', or any other 'fact' of "truth in virtue of meaning." Likewise, she assumes that competent speakers have intuitions about synonymy, ambiguity, inference, etc.[30]

[29]For criticism of the notion of idealization utilized by Chomsky, see Stokhof and van Lambalgen (To appear).

[30]Compare the following quote from Emma Borg's *Minimal Semantics* (2004): "It seems, at least prima facie, that the assumption that sentences encode propositional content is quite reasonable. For instance, ordinary speakers seem happy to judge that the sentence 'Snow is white' in English expresses something true, while the sentence 'Grass is white' expresses something false, or that the sentences 'Snow is white' and 'La neige est blanche' have the same meaning and are thus true or false together. [...] It seems that we can assess arguments in

Semantic intuitions are assumed to be the connection between the Fregean conception of information and the Chomskyan conception of the speaker's linguistic competence, with the added value that these intuitions, purportedly, constitute the empirical domain of formal semantics.

Linguistic competence, conceived as a component of the human brain, is an individual, purely mental notion. If the body is required at all by this notion, it is only needed to embody the act of uttering, or hearing, a sentence. But the psychological state of being competent is not intrinsically related to actions, for one could be in such a state without having the capacity to make use of it. A person can decode all the input that she receives in the form of sound waves without even moving a finger. She only needs to recognize a sound wave as a token of a signal and to decode the literal meaning attached to this signal. Behavior provides evidence for a person being in such a state, but cannot define it. Furthermore, only the person who bears that state can have direct access to it. What is more, this mental state, as it were, makes sense of the external (in the sense of non-mental) input, where this input is, on its own, meaningless.[31]

Finally, the notion of communication, which we will discuss later on in some detail, requires that the association between a sentence and its literal meaning be shared in advance by speaker and hearer. This could not be the case if grasping the literal meaning of the sentence, *qua* psychological state, cannot be the same for speaker and hearer. Hence, these psychological states are supposed to be public, or intersubjective, where this means that they can be possessed by anyone.

1.3 Speaker's meaning vs. linguistic meaning

1.3.1 Two notions of linguistic understanding

We have shown that the formal semanticist conceives language as an object that is independent from its use and, in particular, from communication. However, the fact remains that we communicate with language and, therefore, the formal semanticist needs to explain how this notion of language relates to an account of communication. We shall see in a moment how the formal semanticist addresses this issue.

---

natural language as valid or invalid, yet such assessments *only* make sense if the sentences which form the argument can themselves be the bearers of truth-values." (Borg, 2004, p. 5) .

[31] Compare: "Someone who understands language can hear utterances in it, not just as productions of sound, but as significant speech acts. What he has is an information-processing capacity. His senses furnish him with information to the effect that people are uttering such-and-such sounds—information that is available equally to someone who does not understand the language. What is special about someone who does understand the language is that his sensory intake yields him, in addition, knowledge as to what speech acts, with what content, are being performed" (McDowell, 1980, p. 31).

We should start, however, from the consideration that a distinction must be made between two notions of linguistic understanding—that is, if we accept the formal semanticist's thesis. The first notion refers to a person's knowledge of language that is independent from her ability to communicate with it. Following Recanati's terminology, I shall refer to this kind of linguistic understanding as "semantic interpretation":

> *Semantic interpretation* is the process whereby an interpreter exploits his or her knowledge of language, say L, to assign to an arbitrary sentence of L its [literal meaning] (Recanati, 2004, p. 54, emphasis in the original).

The second notion of linguistic understanding is related to the use of language in communication. But before we turn to the details of this second notion of linguistic understanding we need to say a few words about the formal semanticist's account of linguistic communication. Such an account is obtained by putting together independent accounts of communication and language.[32] We have already presented the independent notion of language in the previous sections. So let us turn to the independent notion of communication.

Communication is an exchange between rational agents, or so the formal semanticist claims. In the received view that we are discussing here, rational agents are autonomous entities in the sense that their rationality is an individual possession. That is, their primary purpose *qua* rational agents is to make sense of the external input they receive from the external world, where this input is, on its own, devoid of any kind of sense. The notion of "making sense," therefore, is a sort of agent-internal process.

The process of making sense of input generated by another rational agent, following Recanati's terminology, can be called *pragmatic interpretation*:

> *Pragmatic interpretation* is a totally different process [from semantic interpretation]. It is not concerned with language per se, but with human action. When someone acts, there is a reason why he does what he does. To provide an interpretation for the action is to find that reason, that is, to ascribe the agent a particular intention in terms of which we can make sense of the action. [...] A particular class of human actions is that of communicative actions. That class is defined by the fact that the intention underlying the action is a *communicative* intention—an intention such that (arguably) its recognition by the addressee is a necessary and sufficient condition for its fulfillment. To communicate that p is therefore to act in such a way that the addressee will explain one's action by ascribing to the agent the intention to communicate that p (Recanati, 2004, p. 54, emphasis in the original).

[32]The notion of communication is 'independent' because its definition is given independently of a notion of language, and the notion of language is 'independent' because its definition is given independently of a notion of communication.

Communication is analyzed in terms of communicative actions and their pragmatic interpretation. As rational actions, communicative actions are performed with an intention, and therefore, to interpret these actions is to recognize such communicative intentions.[33]

When the action to be recognized is a speech act, pragmatic interpretation of this speech act gives rise to the second notion of linguistic understanding. According to this notion, linguistic understanding in communication is conceived as the recognition of a communicative intention behind a speech act. From now on I will use the term pragmatic interpretation only to refer to this kind of recognition.

The question arises what is the relation between these two notions of linguistic understanding, namely, semantic interpretation and pragmatic interpretation? Two distinct answers have been given to this question; we shall delve into them in turn.

1.3.2 Grice's first program

Consider a strategy that uses a notion of pragmatic interpretation to derive a notion of semantic interpretation. This seems to be the case of the philosophical program that Paul Grice pursued in Grice (1957, 1969). I will call this strategy *Grice's first program* of meaning.[34]

There is, according to this program, a methodological distinction between the notion of 'sentence meaning'—i.e., the notion that is to be analyzed—, and the notion of 'speaker's meaning'—i.e., the notion on which the analysis is to be based. This program can be seen as a two-step program: (a) what words mean is somehow determined by what speakers mean by them; (b) what speakers mean is somehow determined by their intentions.

To be sure, the relevant intentions here are communicative intentions. The original formulation of this kind of intention, that Grice referred to as "M-intentions," was the following. An agent M-intended something by uttering x if she "uttered x with the intention of inducing a belief by means of the recognition of this intention" (Grice, 1957, p. 384).

[33] See also, e.g., Grice (1957); Searle (1969); Sperber and Wilson (1986). Compare for instance the following often-mentioned quote: "Human communication has some extraordinary properties, not shared by most other kinds of human behavior. One of the most extraordinary things is this: If I am trying to tell someone something, then (assuming certain conditions are satisfied) as soon as he recognizes that I am trying to tell him something and exactly what it is I am trying to tell him, I have succeeded in telling it to him" (Searle, 1969, p. 47). Note in passing that the way in which this "extraordinary property" of human communication is presented assumes that there is already a message that determines what exactly one tries to say to someone—i.e., the content of the communicative intention. The identity of this message is independent from behavior, from the effects of behavior, from other events, and is quite specific.

[34] I will discuss below the qualification "seems to be the case" in connection with some of the objections raised against this program.

Now, it is worth emphasizing that Grice's first program is at odds with the methodological strategy I attributed to formal semantics. This is because in Grice's first program the notion of language is conceptually dependent on the notion of communication—more precisely, it depends on the notion of recognition of communicative intentions. Stephen Neale clearly presents this point in the following way:

> The idea that sentence meaning is to be analysed in terms of utterer's meaning has been felt to conflict with (i) the fact that knowing the meaning of a sentence is typically a necessary step in working out what U meant by uttering that sentence, i.e., for recovering U's communicative intentions, and (ii) the fact that the meaning of a sentence is determined, at least in part, by the meanings of its parts (i.e., words and phrases) and the way the parts are put together (syntax) (Neale, 1992, p. 544).[35]

Let us, therefore, turn to a review of various objections to Grice's first program, some of which are related to the previous complaint, but some others are related to various features of this program.

One of the first dissenting voices was that of John Searle:

> However valuable this account of meaning is, it seems to me to be defective in at least two crucial respects. First, it fails to account for the extent to which meaning can be a matter of rules or conventions. This account of meaning does not show the connection between one's meaning something by what one says, and what that which one says actually means in the language. Secondly, by defining meaning in terms of intended effects it confuses illocutionary with perlocutionary acts (Searle, 1969, pp. 43f).

To comment on the second problem first, its target is Grice's formulation of an informative intention, namely, to induce a belief in the audience. For the two steps in Grice's first program entail that what sentences mean depend on the speaker's intentions; and, given the formulation of informative intentions in terms of intentions to induce beliefs, what sentences mean depend on intentions to induce beliefs. Searle claims that there are many cases in which what the speaker's words mean cannot depend on the intention to produce in her audience a belief, or a propositional attitude, since the speech act itself might well be produced without such kind of intention. For instance, the speaker might well just speak up because she feels she has to (see also fn. 33).[36]

[35]The quote continues: "In my view, both of these charges are based on misunderstandings of Grice's project." I will return to a discussion of this claim in a moment.

[36]To perform a speech act with the intention to induce a belief will give rise, in Searle's terminology, to a perlocutionary act. The gist of Searle's argument is that there might well be lots of speech acts that do not perform a perlocutionary act, such as merely speaking because one feels she has to. As a consequence of this, and other arguments in the literature, nowadays the definition of an informative intention is usually presented in a neutral way, namely, the intention to 'inform' that p (see, e.g., Sperber and Wilson, 1986).

Moreover, Grice's formulation of an informative intention runs the risk of describing what is communicated in terms of the speaker's intentional state. As against this, McDowell (1980), backed up by Dummett (1993), argues that the gist of linguistic communication is not to determine something about the speaker's state of mind, but rather to determine something about the world.[37]

Now, with respect to the first problem mentioned by Searle in the previous quote, the idea that saying something entails meaning it is called into question by the observation that there are many cases of linguistic communication in which one says something but means something else (or, it has been argued, nothing at all). There are, at least, four clusters of cases: (a) non-literality, (b) errors, (c) non-communicative utterances, and (d) Searle-like examples of communicative tricks.[38]

With respect to cluster (a), there are situations such as lies, ironies, metaphors, sarcasm, etc., where there is a clear distinction between what one's words mean and what one means. For example, by saying "This is great!" one is not expressing one's appreciation of one's bike's flat tire, but one is actually expressing one's frustration with the inconvenience the flat tire generates. Cases in (b) are mistakes, such as when one says to a female friend "That's a nice scarf," when it really is a pashmina. There are various sources of error. For instance, one could be sure what a word applies to, but mistaken in one's perceptions, so to speak. For instance, one could say "The car's speed is 100 miles per hour," just to find out one instant later that the car's speedometer is in kilometers per hour. Or one could be seeing something clearly, but be mistaken in the application of the word, as in the pashmina example above. One could even be certain about the application of the word and about what one is seeing, and still be mistaken. For example, one could say "It's seven o'clock now, so we can sleep one more hour" after looking at one's alarm, just to find out later that the night before the time changed to summer time. Cases in (c) are situations of "translating [to oneself], reciting, or rehearsing, where one utters a sentence with full understanding (one isn't just practicing one's pronunciation) but is not using it to communicate anything" (Bach, 2001, p. 17). Cases in (d) are, e.g., Searle's example of an American soldier who communicates that he is a German soldier to Italian soldiers by ut-

[37]Here is how Dummett sees the point: "From this standpoint, to analyze linguistic meaning along Gricean lines is to pursue an altogether misconceived strategy. When the utterance is an assertoric one, Strawson's version of such an analysis is given in terms of the hearer's recognition of the speaker's intention to communicate that he has a certain belief. McDowell's emendation, that what the speaker wishes to communicate is a piece of information, which may be about anything, rather than only about his own doxastic condition, is undoubtedly an improvement, for language is certainly used primarily as contributing to our transactions with the world, rather than as conveying to one another how it is with us in our thinking parts" (Dummett, 1993, p. 171).

[38]See Searle (1969, pp. 44f); Bach (2001, p. 17); Recanati (2004, §1.7). It is worth noting here that Grice's distinction between "saying," "making as if to say," and "utterer's meaning" could be used to save him from this charge. I will come back to this point in a moment.

tering "Kennst du das Land wo die Zitronen blühen?". The conventional meaning of the sentence is not communicated (since the Italian soldiers are supposed not to know enough German), and thus what is communicated is something quite different from it.

These cases are taken to imply a distinction between the literal meaning of a word or sentence, and what the speaker means with her utterance of the sentence. In connection with this, Davidson formulated the thesis of the autonomy of linguistic meaning:

> Once a feature of language has been given conventional expression, it can be used to serve many extra-linguistic ends; symbolic representation necessarily breaks any close tie with extra-linguistic purpose ... this means that there cannot be a form of speech which, solely by dint of its conventional meaning, can be used only for a given purpose, such as making an assertion or asking a question (Davidson, 1979, pp. 113f).

Note the importance of the presupposition "once [it] has been given conventional expression."[39] To be sure, if there is this distinction between the literal meaning of a sentence and what the speaker means by it, it is not valid that saying something entails meaning it.

Another problem with Grice's first program is related to its 'intuitive plausibility'. For according to this program the notion of sentence meaning must be construed in terms of the recognition of communicative intentions. But how are 'complex' communicative intentions recognized? The problem of 'intuitive plausibility' consists in that it seems implausible that the hearer recognizes communicative intentions that deal with some 'complex' propositions if speaker and hearer do not already share a language where these propositions can be expressed. Compare Searle's take on this issue:

> Some very simple sorts of illocutionary acts can indeed be performed apart from any use of conventional devices at all, simply by getting the audience to recognize certain of one's intentions in behaving in a certain way ... One can in certain special circumstances 'request' someone to leave the room without employing any conventions, but unless one has a language one cannot request of someone that he, e.g., undertake a research project on the problem of diagnosing and treating mononucleosis in undergraduates in American universities (Searle, 1969, p. 38).

A somewhat more principled way to present this problem is this:

> We sense well enough the absurdity in trying to learn without asking him whether someone believes there is a largest prime, or whether he intends, by making certain noises, to get someone to stop smoking by that person's

[39] Also note that Davidson changed his position later on (see, e.g., Davidson, 1984a, 1986).

> recognition that the noises were made with that intention. The absurdity lies not in the fact that it would be very hard to find out these things without language, but in the fact that we have no good idea how to set about authenticating the existence of such attitudes when [linguistic] communication is not possible (Davidson, 1974, p. 144).

Davidson holds that the task of interpreting someone's intentions is not independent from the task of interpreting what she says, at least in the case of detailed, general and abstract propositions. For in this case the available evidence to "authenticate" someone's intentions consists in interpreting the meaning of the words she uses. We cannot ground a theory of interpretation in a theory of intentions, Davidson says, for they are not independent from one another.

It is beyond the scope of the present work to discuss how Grice's first program can be defended against these objections. Suffice it to briefly mention that Neale (1992) has put forth a defense of this program along the following lines. The objections against Grice's first program collectively show, or have been taken to show, that our access to the proposition the speaker intends to communicate is mediated by our knowledge of the rules of the language—i.e., pragmatic interpretation is mediated by semantic interpretation.[40] It is in virtue of semantic interpretation that one determines what the sentence uttered means. What remains is the extra problem of carrying out a pragmatic interpretation, namely, to determine what the speaker actually intends to communicate on the basis of the meaning of the sentence uttered and the context of utterance. Neale claims that Grice's program is compatible with this conception. He gives two reasons. First, Neale propounds that there is a distinction between "(i) accounts of what [a speaker] said or what [a speaker] meant by uttering [a sentence] and (ii) accounts of *how hearers recover* what [a speaker] said and what [a speaker] meant by uttering [a sentence]" (*Ibid.*, p. 552, emphasis added). Grice agrees with the idea that, in recovering what a speaker meant by uttering a sentence, she makes use of what sentences in a language mean (*Idem*).[41] Second, Neale takes Grice to claim that an 'analysis' of semantic interpretation will ultimately show that such inter-

[40] I must hasten to say that the solution sketched in this paragraph, namely, that the hearer recognizes what the speaker says via a prior knowledge of the language that is shared between her and the speaker, is not Davidson's solution. For him, it is just as pressing to discuss how we know that we share a language with the speaker as it is to discuss how we recognize what the speaker says. This problem, which he calls the problem of *Radical Interpretation* (Davidson, 1973), must be solved without appealing to the idea of an antecedently shared language. The solution to this problem is supposed to establish the nature of the evidence that an interpreter can use to determine which language is spoken by the speaker. For Davidson, such a project has to be worked out together with the project of determining the evidence for the attribution of beliefs (Davidson, 1974).

[41] Compare: "Of course, I would not want to deny that when the vehicle of meaning is a sentence (or the utterance of a sentence), the speaker's intentions are to be recognized, in the normal case, by virtue of a knowledge of the conventional use of the sentence" (Grice, 1989, pp. 110f).

pretation depends on the speaker's intentions. Indeed, Neale claims that the gist of Grice's theory of meaning is to show that "... utterer's meaning is analytically 'primary' or 'basic' " with respect to sentence meaning (Neale, 1992, p. 551). The reason is that a correct analysis must show that "an arbitrary sentence X means (in L) 'Paris is beautiful in springtime' just in case (very roughly) by uttering X, optimally L-speakers mean (would mean/should mean) that Paris is beautiful in springtime" (*Idem*).

To put it another way, the defense of Grice's first program consists in claiming that such a program does not put forward a semantic theory, but rather a foundational theory of meaning, in Speak's (2010) terms. That is, a semantic theory "is a theory which assigns semantic contents to expressions of a language", and a foundational theory of meaning "is a theory which states the facts in virtue of which expressions have the semantic contents that they have" (*Idem*). Note that a foundational theory of meaning presupposes a semantic theory; the semantic theory determines what meanings are attached to sentences, and a foundational theory says why these are the meanings that are attached to these sentences.

Grice's first program is an 'analysis' of sentence meaning in the sense of a foundational theory of meaning. However, the 'recovery' of the speaker's intentions does not depend on the foundational theory of meaning, but on the semantic theory that the former presupposes. This reinterpretation leads us to what I shall call Grice's second program.

1.3.3 Grice's second program

Grice's second program, arising from his *Logic and Conversation* (1975), starts out by taking for granted a notion of sentence meaning and a distinction between this notion and a notion of speaker's meaning. Although Grice's intentions might not have been completely and faithfully respected, the formal semanticist claims that sentence meaning can be equated with the notion of literal meaning that she deals with.[42] The gist of the second program is then the derivation of speaker's meaning out of sentence meaning.

We can mention in passing that the distinction between sentence meaning, attached to sentence-types, and speaker's meaning, attached to utterances of sentences, has proven a very useful way to safeguard the notion of meaning used in formal semantics against many attacks. This strategy anticipates the main strategy of semantic minimalism, as will be shown in the next section, and is a counter argument against the observation that the 'intuitive' meaning of an

[42]Part of the reason for this equation consists in Grice's use of logical examples. Compare: "It is a commonplace of philosophical logic that there are, or appear to be, divergences in meaning between, on the one hand, at least some of what I shall call the formal devices—$\neg$, $\wedge$, $\vee$, $\supset$, $(\forall x)$, $(\exists x)$, (ιx) (when these are given a standard two-valued interpretation)—and, on the other, what are taken to be their analogues or counterparts in natural language—such expressions as *not, and, or, if, all, some* (or *at least one*), *the*" (Grice, 1975, p. 22).

expression usually differs from the meaning of its formal device. To mention an example, in actual uses of language the quantifier "some" is understood in a different way than the formal device "∃." Suppose that a speaker utters a sentence such as (1). She does not see it compatible with (2), but instead seems to have also in mind (3):

(1) Some of John's children came.

(2) All of John's children came.

(3) Some of John's children didn't come.

If sentences (1)–(3) are 'interpreted' according to the 'translations' in first-order logic and, in particular, if "some" is interpreted as "∃," then (1) is compatible with (2) and does not imply (3).[43] The standard move to account for this perceived difference between "some" and "∃" is to resort to a difference between the literal meaning of the sentence and a complementary level of meaning occurring in the conversational context. Accordingly, the compatibility between (1) and (2) depends on literal meaning, whereas the entailment from (1) to (3) depends on the conversational context.

What is this level of meaning occurring in the conversational context—i.e., speaker's meaning—and what is its relation to the structural, literal meaning of the expression uttered? There seems to be wide consensus about the following: the meaning occurring in the conversational context is determined by the speaker's intentions.[44] The speaker's intentions are somehow derived from the literal meaning of the expression uttered and the conversational context.[45] Note that to interpret the speaker's intentions is to perform a pragmatic interpretation, as defined earlier in this section.

In his *Logic and Conversation*, Grice proposed a methodology to work out the pragmatic interpretation of an utterance. The extent to which this methodology can be used to work out the pragmatic interpretation is contentions, and I will say a few words on this issue in a moment. This methodology is based on finding out what he called an *implicature*. There are implicatures of different kinds, which have different relations with the literal meaning of the expression uttered. One kind of implicature is derived in the context of use in a way that goes beyond the

[43]The quantifier "∃," as standardly used in first-order logic, is more faithfully interpreted as "at least one." Hence, to say that at least one of John's children came is compatible with both the claim that all of John's children came and the claim that some of John's children did not come.

[44]This is the second step from Grice's first program: what speakers mean by their words is somewhat given by their intentions.

[45]This contradicts the natural interpretation of the first step of Grice's first program. Note, however, that under Neale's interpretation of this program, as discussed above, it turns out to be no contradiction.

conventional use of language.[46] They are called *conversational* implicatures. Grice contends that any discursive context is 'governed'[47] by a Cooperative Principle, which requires the speaker to make her "conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which [she is] engaged" (Grice, 1975, p. 26). This principle is analyzed in four maxims, the exact formulation of which is not relevant for our purposes. The following are the ingredients a hearer needs in order to work out a conversational implicature, according to Grice:

> To work out that a particular conversational implicature is present, the hearer will reply on the following data: (1) the conventional meaning of the words used, together with the identity of any references that may be involved; (2) the Cooperative Principle and its maxims; (3) the context, linguistic or otherwise, of the utterance; (4) other items of background knowledge; and (5) the fact (or supposed fact) that all relevant items falling under the previous headings are available to both participants and both participants know or assume this to be the case (Grice, 1975, p. 31).

A particular conversational implicature is recognized in the following process. First, the hearer grasps the literal meaning of the sentence uttered by the speaker, then she sees that this literal meaning is in conflict with The Cooperation Principle by violating one of its maxims, which leads her to infer that the literal proposition cannot be the one the speaker meant to convey. Thus, the semantic interpretation should be replaced with a more suitable interpretation, consisting in a proposition that does not conflict with the maxims in question.[48]

What is the exact relation between the process of working out implicatures and the recognition of speaker's communicative intentions? There are at least two reasons for claiming that they are different. First, according to Grice, the

[46]The implicatures that are derived from the conventional use of language Grice calls conventional implicatures.

[47]The nature of this 'governance' relation is not altogether clear. The Cooperative Principle could be a principle that *de facto* underlies the behavior of speaker and hearer, or it could be a normative principle. Compare Grice's own presentation of this point: "I am, however, enough of a rationalist to want to find a basis that underlies these facts, undeniable though they may be; I would like to be able to think of the standard type of conversational practice not merely as something that all or most do *in fact* follow but as something that it is *reasonable* for us to follow, that we *should not* abandon. For a time, I was attracted by the idea that observance of the Cooperative Principle and the maxims, in a talk exchange, could be thought of as quasi-contractual matter, with parallels outside the realm of discourse ... But while some such quasi-contractual basis as this may apply to some cases, there are too many types of exchange, like quarreling and letter writing, that it fails to fit comfortably" (Grice, 1975, p. 29).

[48]See (Grice, 1975, p. 31). There are in the market many different proposals as to how the hearer works out implicatures. There is Grice's proposal, there are Neo- and Post-Griceans (Sperber and Wilson, 1986), there are Optimality Theorists (Dekker and van Rooij, 2000; van Rooij, 2009), there are Game Theorists (van Rooij, 2009; Franke, 2009), etc. (see Levinson 1983, ch. 3; Franke 2009, pp. 9–13, and the literature mentioned therein).

process of working out an implicature starts from "the conventional meaning of the words used, together with the identity of any references that may be involved." It is a hot discussion whether such a starting point requires recognition of the speaker's communicative intention. In particular, it is contentions whether the identity of the referents is fixed by the speaker's communicative intentions and, hence, whether working out an implicature requires recognition of the speaker's communicative intention. I will discuss this issue in more detail in the upcoming section. Second, an intrinsic characteristic of implicatures is that they can be 'canceled'. But what usually cancels an implicature is the recognition that the speaker's communicative intention is different from the implicature. This entails that implicatures and communicative intentions cannot be equated.

Finally, it is worth noting that since formal semantics only deals with structural aspects of meaning, formal pragmatics, conceived as the study of pragmatic interpretation on the basis of a formal semantics, can only deal with equally formal aspects of pragmatic interpretation.

1.3.4 Linguistic communication

Parallel to the distinction between semantic interpretation and pragmatic interpretation is the distinction between two notions of communication. The notion of semantic interpretation gives rise to a notion of communication in which literal meanings are communicated. Pragmatic interpretation gives rise to a notion of communication in which the speaker's communicative intentions are communicated. In order to make this point clearer, we can resort here to Sperber's and Wilson's (1986, ch. 1) distinction between a code model and an inferential model of communication. Semantic interpretation corresponds to the code model and pragmatic interpretation corresponds to the inferential model.

Suppose the communicative scenario consists of a Source and a Destination. According to the *code model*, communication is possible because there is a shared set of pairings between signals (sentences) and messages (sentence meanings)—i.e., shared in the sense that both Source and Destination have the same set of signal-message pairs at their disposal. In the code model, Source produces a token of the signal which corresponds, according to the code, to a message (it might be assumed that Source intends to communicate this message). The signal is perceived by Destination, who decodes it and obtains the original message.

In the *inferential model* of communication, an association between signal and message is inferred from contextual clues in each and every instance of communication. No previous association between the set of signals and the set of messages is presupposed or utilized. In other words, an inferential model does not presuppose or utilize a code consisting of pairs of signals and messages; this feature sets the inferential model apart from the code model, as well as from the hybrid model that will be presented in a moment. In strict terms, since the idea of a signal presupposes the idea of a message, in the inferential model there are no signals

prior to the instance of communication. When Source wants to communicate a particular message m, she produces a behavior b with a specific communicative intention. The communicative intention consists in that Destination recognize that Source has the intention to inform Destination that m. From this behavior b, and other sources of information, Destination has to infer Source's communicative intention.

The formal semanticist conceives linguistic communication as a hybrid between a code and an inferential model of communication. How semantic interpretation—in the guise of a code model—and pragmatic interpretation—in the guise of an inferential model—are hooked up to this *hybrid model* can be seen in the following way. In semantic interpretation, the code is the connection between sentences and their meanings. Such a connection must be shared in advance of communication by speaker and hearer so that the code model can work. After the hearer decodes the meaning of the sentence, she can work out the speaker's intentions using the former as evidence for the latter, along with any other source of evidence that may assist the hearer in her task.[49] Thus, this connection between semantic interpretation and pragmatic interpretation is intended to indicate how a use-independent notion of language plays a role in people's communicative exchanges.

It is worth noting that the difference between the hybrid model and the inferential model lies in that the former presupposes a code, whereas the latter does not. The claim that a code is presupposed by the model of communication can be paraphrased with the claim that semantic interpretation is the input to pragmatic interpretation.

In making the claim that semantics is the input to pragmatics I am cutting an important corner, namely, whether the outcome of the decoding process is a propositional content or not. This is by no means a minor issue. I will delve into it in the next section. All that matters at this point is how semantic interpretation and pragmatic interpretation are connected, and that this connection is the way the formal semanticist explains how language is used. Not withstanding the differences with respect to the details of the outcome of the coding-decoding process—i.e., whether the outcome is propositional or not—this 'pipe-line' schema of communication is widely shared by formal semanticists and pragmatists alike.[50]

[49]Compare: "Verbal communication is a complex form of communication. Linguistic coding and decoding is involved, but the linguistic meaning of an uttered sentence falls short of encoding what the speaker means: it merely helps the audience infer what she means. The output of decoding is correctly treated by the audience as a piece of evidence about the communicator's intentions. In other words, a coding-decoding process is subservient to a Gricean inferential process" (Sperber and Wilson, 1986, p. 27).

[50]See, e.g., Grice (1975); Montague (1974a); Stalnaker (1999b); Borg (2004). Consider also this quote from Emma Borg's (2004, p. 263) *Minimal Semantics*: "Knowledge of the simple and complex meanings encoded by the linguistic system is simply not tantamount to grasping what goes on in a communicative exchange. For the minimal semanticists, communication is a global art [...] To communicate, an agent needs not just the information and rules captured

The relevance of the priority of semantic interpretation with respect to pragmatic interpretation can be underscored if we consider an alternative conception of the role of language in communication. According to this conception, semantic interpretation is not required to be prior to pragmatic interpretation. Consider the following quote from Bach, where 'what the speaker says' plays the role of the semantic content of the sentence:

> It is a mystery to me why facts about what the hearer does in order to understand what the speaker says should be relevant to what the speaker says in the first place. How could the fact (if it is a fact) that what is said sometimes has no psychological reality for the hearer show that it is a mere abstraction? All this shows is that hearers can infer what a speaker is communicating without first identifying what the speaker is saying. Employing the semantic notion of what is said does not commit one to an account of the temporal order or other details of the process of understanding. This notion pertains to the character of the information available to the hearer in the process of identifying what the speaker is communicating, not to how that information is exploited (Bach, 2001, p. 25).

According to Bach, semantic interpretation is the study of what the speaker says. It deals with the "character of the information available to the hearer." If the information that is available to the hearer were part of a code that were shared between speaker and hearer prior to communication, the hearer could decode this information from the sentence uttered by the speaker. Clearly, assuming a code is a way to warrant the success of semantic interpretation, which is then the starting point of pragmatic interpretation. However, this is not what Bach has in mind. For him, the hearer might infer what the speaker is communicating without decoding first what the speaker says. One way to interpret Bach's contention is that there is no 'pipe-line' schema of communication.[51]

within an encapsulated language faculty, she also needs information and rules from her global cognitive territory [... S]emantic knowledge is important and special—without it we would be robbed of the ability to interpret the meanings of words and sentences *and thus linguistic communication would be impossible*." Consider also this quote from Herman Cappelen's and Ernie Lepore's (2005b, p. 215) *A Tall Tale: In Defense of Semantic Minimalism and Speech Act Pluralism*: "How would it help an audience to know that the minimal proposition, that is, *that Osama bin Laden is tall*, was expressed? [... I]t is a starting point. The audience knows that the speaker is talking about Osama bin Laden and attributes tallness to him, and not, for example, to Sprite cans, Sweden, Britney Spears, or pig ears. There's lots to talk about in the universe. The proposition semantically expressed pares it down considerably. Knowledge that this proposition was semantically expressed provides the audience with the *best possible* access to the speaker's mind, given the restricted knowledge she has of that speaker. In general, audiences know what to look for in such situations; they know what kind of information would help narrow down more closely what the speaker wanted to communicate."

[51]The other way is that 'what the speaker says' (conceived as a propositional content) is not the output of semantic interpretation, but that there is indeed a semantic interpretation that is prior to pragmatic interpretation. That is to say, whatever the outcome of semantic

Bach seems to conceive what the speaker says as belonging to a 'public' language, as opposed to a 'shared' language. The difference between a 'public' and a 'shared' language is the following. A 'shared' language is a set of signal-meaning pairs that is somehow represented in the same way in the mind of various speakers. On the other hand, a 'public' language can be understood by analogy with a physical object. As such, a physical object might be observed by anyone—this is why it is 'public'. But a person's position with respect to this object could be such that she does not observe it. For there could be something blocking her vision, or there could be not enough light, or what have you. This object will not be shared between her and another person who has a visual grasp of it. Likewise, a 'public' language might be grasped by anyone, but a person's particular mental state might be such that she does not grasp it. (Note that this is not the only way to conceive of a public or a shared language.)

A position such as Bach's must explain this notion of a 'public' language, and how it can play the role of being "the character of the information available to the hearer." Usually, however, this requirement is left unanswered, giving the impression that there is a "third realm" out there responsible for such a character. Consider the following quote from Levinson, who I take to make similar commitments to those of Bach's:

> Aspects of semantic content [...] can be specified by the apparatus of a recursive truth definition, but this is unlikely to have a direct cognitive counterpart [... T]ruth-conditional semantics viewed in the realist way—as a direct veridical mapping of semantic structures onto states of affairs (bypassing the head as it were)—is useful as a yardstick of human performance. Something *like* this is what the cognitive process must do, but as in the case of visual illusions, they may fail to do so, and *how* they generally do so will be unrelated to the machinery of truth-conditional semantics. So we can have our cake and eat it too: we can use the insights of truth-conditional semantics without buying into Realism, and without caring that it obviously fails to meet any criteria for adequacy as a cognitive model (Levinson, 2000, pp. 7f).

With all due respect to Levinson and Bach, this stance towards the notion of semantic content is not like having one's cake and eating it too. It is an unexplicative stance that cries for remedy—a third realm is not an option, nor is an unexplained "yardstick of human performance."[52]

---

interpretation is, it need not be propositional, but nevertheless it is the input to pragmatic interpretation.

[52]It might be argued against the criticism in question that what Levinson is proposing is the following. "Truth-conditional semantics," being a "yardstick of human performance," is a sort of "computational level of analysis" in Marr's (1982) terms. This level, let us recall, explains a process at its highest level of abstraction by only considering the input-output conditions. The function thus specified might well fail to "meet any criteria of adequacy as a cognitive

The empirical science view of formal semantics (see §1.1.2) addresses this problem by giving semantic interpretation a place in the 'pipe-line' schema of linguistic communication mentioned above. This is a commitment to a psychological view of semantic interpretation. The idea shared by these semanticists is that semantic interpretation is a first step in the complete process from the recognition of the phonological and syntactical description of the sentence to the recognition of the speaker's communicative intention. As such, semantic interpretation is a kind of mental process, and therefore, it plays a causal role in communication, so to speak. The causal role consists in both speaker and hearer being in the same psychological state, which characterizes the success of semantic interpretation.

The assumption of a shared language is a central assumption of the entire explanation of linguistic communication. But whereas I took this *assumption* as something that stands in need of justification precisely because of its importance,[53] some semanticists take this importance to be the *reason* that justifies that there must be a shared language.[54] In the next chapter I will bring to bear the phenomenon of incomplete understanding as a way to challenge such an assumption.

1.4 Contextualism vs. Minimalism

We shall turn now to the debate between semantic minimalism and semantic contextualism, with which we will address a number of loose ends, and with which we will bring to a close this introduction to the philosophical presuppositions of formal semantics. Before we can delve into the details of the debate itself, we need to get clear on a number of issues, such as the notions of context and context-dependence. Nonetheless, we shall start out with a short introduction of the main lines of the debate.

The gist of the debate between semantic minimalists and semantic contextualists is the extent to which the truth-evaluable content of the sentence depends on its context of utterance. On the one hand, despite the fact that the truth

model," since its purpose is not to provide an explanation at the algorithmic level (the next level down in Marr's hierarchy). However, seen this way, Levinson's approach would amount to nothing over and above an engineering view of formal semantics (see §1.1.4). Recall that this approach presupposes that the right input-output conditions are given beforehand and, hence, the formal semanticist that endorses this view eschews any substantive claim as to how her own findings bear on linguistic competence, regardless her contention that she is providing an explanation at the algorithmic level. For these explanations already assume that linguistic competence was correctly characterized by the input-output conditions provided by "truth-conditional semantics." That is, against the context of the present inquiry, Levinson's approach, if interpreted this way, eschews the issues that must be addressed by an empirical study of language.

[53]It might be worth noticing that this is the starting point of Davidson's inquiry in his *Radical Interpretation* (1973).

[54]See the quotes in fn. 50. See also Cappelen and Lepore (2005b); Kemmerling (1993).

conditions of some sentences seem, intuitively, to depend on some elements that are not intrinsic to the sentence (e.g., the truth conditions of the sentence "That tree over there is an elm" depend on which tree the speaker is referring to), semantic minimalists contend that this situation is valid only for a 'small' number of expressions, and that when it holds, there is something intrinsic to the sentence that tells the speaker what she needs to 'look for' in the context of utterance to fix the sentence's truth conditions. As against this approach, several alternatives can be distinguished that differ as regards the extent to which there is something extrinsic to the sentence that tells the speaker to 'look' into the context of utterance to fix the sentence's truth conditions. At the end of the spectrum there is the approach known as "radical contextualism," according to which every sentence requires something from the context of utterance, not specified by the sentence, before its truth conditions can be fixed.

1.4.1 The issue of context dependence

The issue of dependence on the context of utterance is, *prima facie*, a challenge to the purported priority and independence of semantic interpretation with respect to pragmatic interpretation. This challenge can be put in the following way: *if* a context of utterance is needed in order to determine the *meaning* of a sentence, and *if* this need presupposes any form of pragmatic interpretation, then semantic interpretation cannot be prior to, and independent from, pragmatic interpretation.

The move available to safeguard the autonomy of semantic interpretation is to deny these two premises. That is, (i) the formal semanticist makes a distinction between the meaning of a sentence and the content of an utterance of a sentence, so that only the latter depends on context; and (ii) a notion of context is tailored in such a way that it is independent from a notion of pragmatic interpretation.

This move can be illustrated with two examples. The first example deals with how the reference of certain words depends on context. The referents of words are important since a (declarative) sentence's truth conditions are laid down in terms of the referents of the words that constitute it, and since the formal semanticist maintains that truth conditions constitute a fundamental aspect of a (declarative) sentence's meaning. If a word in a sentence does not have its reference fixed, the sentence cannot have its truth conditions fixed either. Thus, the phenomenon of how words may change reference from context to context is central to formal semantics.

One kind of words the reference of which depends on context are called *indexicals* (Kaplan, 1989; Braun, 2008). According to the received view, there are two kinds of indexicals: pure indexicals, and (true) demonstratives. Pure indexicals are certain pronouns (e.g., 'I', 'you'), temporal adverbs (e.g., 'presently', 'today'), and some adjectives (e.g., 'my', 'actual'). The reference of a pure indexical is supposed to be fixed in virtue of the rules of language. For instance, the word "I"

is conceived as a pure indexical word. It is argued that its reference is fixed by a rule of language, namely, that the word "I" refers to the speaker. Demonstratives, on the other hand, are pronouns such as 'he', 'that', etc. The reference of a (true) demonstrative is not fixed in virtue of the rules of language, but, according to Kaplan, depends on a demonstration—i.e., an act that makes an object salient in the situation of the utterance. I will come back to demonstratives in more detail below.

Two remarks are in order. First, some demonstratives can have non-indexical uses, that is, when they work as anaphoric pronouns. According to the received view, the reference of an anaphoric pronoun is fixed via a process of anaphora resolution, in which the anaphoric pronoun is determined to be co-referential with another referential expression in the discourse. The second remark is that complex expressions, namely definite descriptions such as 'The king of France', also refer to an entity. It has been argued (Donnellan, 1966; Ludlow, 2009) that the reference of these expressions can be fixed in two different ways. The first one contends that the referent of a definite description is whoever satisfies the description—i.e., when it is used attributively. The second one contends that the referent of a definite description is whoever the speaker intends to refer to, regardless of whether the description is true of him—i.e., when it is used referentially. Note, however, that the first way depends on contextual factors that are independent from the speaker's intentions—e.g., the people in a room where speaker and hearer are—, whereas the second way makes speaker's intentions essential to the process of reference fixing. That a definite description can be used in the second way has been considered an aspect that concerns pragmatics and not semantics.

The literal meaning of a word—'character' in Kaplan's terms—is assumed to determine, together with a given context, the reference of a word. In like manner, says the formal semanticist, the literal meaning of a sentence has the function of providing a content for the sentence for each context. It is worth pointing out that, because the meaning of a sentence is a function from contexts to contents, as such it is independent of context. Thus, the meaning of a sentence can remain constant across contexts, and what changes is just its content. A sentence has truth conditions, but these truth conditions are context-dependent.

It is very important to note that the formal semanticist assumes that (i) whether a context is required or not in order for a word to have its reference fixed or a sentence to have its content fixed is something that is determined by the literal meaning of the word or the sentence; and (ii) which feature of the context is required, if any is required, is also something that is determined by the literal meaning.[55] Hence, obtaining the content of a word or a sentence, the

[55]Note also that while a sentence containing a definite description can be used in a referential way, so that the reference of the definite description is fixed by the speaker's intentions, the formal semanticist assumes that such a definite description has, as it were, in a default way, its reference fixed attributively. Thus, while (i) and (ii) above are not valid for a sentence containing a definite description used in a referential way, it is valid for the *same* sentence used

formal semanticist claims, does not require (though it can utilize, viz. definite descriptions used referentially) any form of pragmatic interpretation.

In the second example of context dependence we can observe a similar move to safeguard the independence of semantic interpretation from pragmatic interpretation. Consider the following quote:

> Consider the contrast between the following minimal pair (due to Barbara Partee):
>
> (1) I dropped ten marbles and found all of them, except for one. It is probably under the sofa.
> (2) I dropped ten marbles and found only nine of them. ??It is probably under the sofa.
>
> The first sentences in (1) and (2) are truthconditionally equivalent: they provide the same information about the world. [...] At the same time, however, one may observe that whereas the continuation with the second sentence in (1) is completely unproblematic, the same continuation in (2) is not equally felicitous. (Groenendijk and Stokhof, 1999, p. 52).

The present example shows, from an intuitive point of view, that a change of context (i.e., a change in the previous sentence) brings about a change in interpretation. It is assumed that the literal meaning of the sentences in (1) and (2) in the quote need to explain why the sentence "It is probably under the sofa" is readily (semantically) interpretable when preceded by the sentence "I dropped ten marbles and found all of them, except for one," but not when preceded by the sentence "I dropped ten marbles and found only nine of them."[56] If the meaning of a sentence is identified with its truth conditions, both these sentences have the same truth conditions and, therefore, constitute the same context. In such case, we lack formal elements to explain the intuition in question. However, by using a richer notion of meaning, in particular one that keeps track of referents introduced previously in the discourse, we can explain the difference in interpretation. The pronoun "it" can be considered an anaphoric one in (1), so that it links with a referent already determined by the previous sentence, but in (2) it can only be a demonstrative that requires its reference to be fixed in a different way.[57]

---

in an attributive way.

[56]It is worth noting that this 'intuition' arises when considering the sentence in a context of use, as Groenendijk and Stokhof make clear: "Note that if there is a pause between the two utterances, then the sequence in (2) becomes just as acceptable as that in (1). The 'pragmatic effect' of the two opening sentences is in all likelihood exactly the same: we go down on our knees and help to search for the missing marble. What is remarkable, is that we first have to start this physical exercise in order for the second sentence in (2) to become felicitous, whereas in the case of (1) it is so already before we start doing our gymnastics" (Groenendijk and Stokhof, 1999, p. 70, fn. 14).

[57]It is worth mentioning that Stalnaker (1998) has proposed a different way to interpret

Literal meaning remains constant across contexts, and what changes is just the content of the utterance of the sentence. The literal meaning of a sentence has the function of providing, together with a context, an interpretation for the utterance of the sentence. The previous discussion has the purpose of showing that the context of interpretation of a given sentence S must contain (i) the sentences used prior to the interpretation of S, and (ii) keep track of the referents introduced by them.

Other examples of a similar move are, e.g., temporal anaphora[58] and dimensional adjectives.[59]

A sentence without demonstratives, the formal semanticist claims, can be semantically interpreted independently from pragmatic interpretation, but the interpretation might be relative to a context. For the sentence might contain indexicals (other than demonstratives), anaphoric pronouns, or definite descriptions, in which case at least the following elements should make part of the context: the speaker, the hearer, the time of utterance, the place of utterance, the previous discourse. Again, it is important to note that which feature of the context is required, if any, is supposed to be something 'triggered' by the literal meaning of the sentence.

A related issue is that of compositionality. A compositional analysis of the meaning of sentences demands that the required feature of context be codified by a component of the sentence, and, ultimately, by a word. Thus, for instance, the truth value of "It's raining" depends, among other things, on the time of utterance. Hence, either the pronoun "It," the verb "to be," or the verb "to rain" must contribute the time-parameter, which must get its value from the time of utterance provided by the context.[60] A similar situation occurs with the phenomenon of anaphora that crosses the border of sentences, such as "A man walks in the park. He whistles." The pronoun "he" must have, as it were, built into its meaning the *possibility* of looking into previous sentences in order to fix a referent—in this example, to be bounded by the existential quantifier codified by "a man."[61] Be that as it may, this much needs to be clear that whatever keeps track of the required feature of the context, whether the theory abides by the principle of compositionality or not, is a formal 'tag' that is either codified

Partee's problem. He argues that the contexts resulting from the interpretation of the first sentence in each of the sequences (1) and (2) are not equivalent in terms of truth conditional content. For "it is a manifestly observable fact that, in each case, a certain sentence was uttered[;] this fact, together with any additional information that follows from that fact, conjoined with standing background information about linguistic and speech conventions, is available to distinguish the two posterior contexts" (*Ibid.*, p. 11). However, it is not clear to me how Stalnaker's suggestion can be represented in a fruitful way only by appealing to sets of possible worlds.

[58]See, e.g., Partee (1984b).

[59]See, e.g., Simmons (1993).

[60]See Lewis (1970); Janssen (1997).

[61]See Gamut (1991, vol. 2, §7.3); Groenendijk and Stokhof (1991).

in the syntactic structure of the sentence, in its meaning, or in the formal process of semantic interpretation.

1.4.2 Two notions of 'what is said'

We have seen that, because of the issue of context dependence, a difference must be posited between the literal meaning of a sentence, which is assumed not to change from context to context, and the (truth-evaluable) content of the utterance of the sentence, which *might* change from context to context. This content is sometimes called 'what is said', and is conceived to be different from the content of the speaker's informative intentions.

The notion of 'what is said' is the bone of contention between minimalists and contextualists. Both minimalists and contextualists assume that 'what is said' is truth evaluable, plays a necessary role in linguistic communication, and they both think that it (partly) constitutes the domain of study of semantics, though they ascribe different properties to it. However, before we can discuss these opposing conceptions of 'what is said', we need to sort out two different notions of context.

In the debate between minimalism and contextualism two kinds of features of the context that are appealed to when determining 'what is said' have been distinguished: they can be 'objective' or they can be 'perspectival/intentional' (Borg, 2004, p. 29).[62] The former can be specified independently of the speaker's intentions—such as the identity of the speaker, the time of utterance, the addressee(s), the prior sentences in the discourse—, the latter essentially depends on the speaker's intentions.[63]

A context of use of the first kind is a list of relevant indexes that can be dealt with in formal grounds without appealing to the speaker's intentions. The qualification 'relevant' means that just how many, and what kind of, 'objective' indexes are required from a context of utterance is not a trivial issue.[64] Semanticists usually choose a small and fixed set of indexes before they develop their theories. This observation bears witness to the trade off between being formally tractable and its commitment to being an accurate model of reality.

There is a different notion of context of utterance which allows, besides the above-mentioned 'objective' features, 'perspectival/intentional' features as well.

[62] It is worth noting that I will develop a different notion of context (situations of use) in chapter 4.

[63] According to this distinction, Bach's division between 'wide context'—i.e., any contextual information relevant to determining the speaker's intention—and 'narrow context'—i.e., information specifically relevant to determining the semantic values of indexicals—is an orthogonal one (see Recanati, 2004, p. 56). Narrow context has objective as well as intentional features (see the ensuing discussion), and wide context is so vaguely formulated that it too can easily be thought to contain both features.

[64] It is worth pointing out the myriad ways in which the reference of demonstratives and indexicals can be fixed. There are, for instance, pure, impure, mixed, and derivative uses of demonstratives or indexicals and this distinction is based on the various ways in which their reference is fixed (see, e.g., Rast, 2006, §54.2.3).

Clear examples of these features are the values of (true) demonstratives. According to Recanati, there is no way around the claim that the value of a demonstrative cannot be determined without recognizing the speaker's intentions.

> [T]he notions of 'demonstration' and 'salience' are pragmatic notions in disguise. [...] Ultimately, a demonstrative refers to *what the speaker who uses it refers to by using it.*
>
> To be sure, one can make that into a semantic rule. One can say that the character of a demonstrative is the rule that it refers to what the speaker intends to refer to. As a result, one will add to the [...] context a sequence of 'speaker's intended referents', in such a way that the n^{th} demonstrative in the sentence will refer to the n^{th} member of the sequence. Formally that is fine, but philosophically it is clear that one is cheating (Recanati, 2004, p. 57, emphasis in the original).

In the quote above, Recanati brings out the significant difference between the two notions of context. 'Intentional' features of context cannot merely be considered as placeholders for a value readily contributed by the context. Finding the value of an 'intentional' feature of context requires a good amount of pragmatic interpretation.

The formal semanticist conceives of the context that contains the value of demonstratives as treatable without making reference to the speaker's intentions, or that if such reference need be made, it does not require the full-blown recognition of the speaker's intentions, or that no far-reaching consequences follow if the speaker's intentions are required.[65] Let us consider Borg's arguments against this move:

> [I]t may be objected here that it is not a grasp of speaker intentions in general that is in question [...], but only a grasp of some special, select set of speaker intentions—say those relevant to the determination of a referent for an indexical or demonstrative. However, I don't think this move take us very far: first, we need some principled reason for thinking that there is such a set of distinct referential speaker intentions, which can be separated from the complex web of other things that a speaker takes to be relevant in the context of utterance. Yet, in many cases (e.g. where there is no ostensive gesture) to work out that, say, Darren intends to refer to Brett, not Shane, by his utterance of "He's quick" we need to

[65] This seems to be Cappelen's and Lepore's position: "Of course, if someone claimed that the semantic content didn't depend in any way on speaker's intentions, it would be cheating, but we don't know of anyone who makes that claim. It is telling that Recanati doesn't quote a single person who does. We certainly don't. Maybe he thinks it's cheating because he thinks the word 'semantic' should be used to describe *only* those features of communicated content that do not depend on speaker's intentions. If that's how Recanati wants to use the term 'semantics', that's OK with us. It's just not how we use it" (Cappelen and Lepore, 2005a, p. 149, emphasis in the original). Cappelen's and Lepore's confidence relies on their claim that only a small proportion of expressions depend on speaker's intentions.

> know quite a lot about how Darren sees the current situation. Secondly, we would need a reason to think that grasping members of any such privileged set of intentions is somehow easier than reasoning about other intentions the speaker has (that is, that working out that a speaker intends to refer to *A* is easier than working out why they said what they did), yet we have little reason to think this is the case. Finally, we would need to be convinced that the role of speaker intentions could be properly limited just to referential intentions, but this is an assumption which is called into question by many of the examples raised by [contextualists] (Borg, 2004, footnote 22 in pp. 31f).

Borg's criticism is acute. It is based on the idea that there are no clear conditions to individuate the specific part of the speaker's intentions that fix the reference of demonstratives—i.e., what she calls the referential speaker intentions—, and that, if this were possible, it is not clear why it would be easier than recognizing the full extent of the speaker's intentions. In other words, fixing the reference of demonstratives is a full-blown task of pragmatic interpretation.[66]

The relevance of the distinction between these two notions of context is the following. The formal semanticist posits a distinction between the literal meaning of a sentence and the content of an utterance of this sentence—i.e. 'what is said'. Moreover, it is assumed that 'what is said' is calculated from the literal meaning of the sentence and some features of the context of utterance. The literal meaning of the sentence is conceived as a function from features of contexts to 'what is said'. Now, *if* the features of context required by this function were 'perspectival/intentional', identifying these features would require pragmatic interpretation, that is, recognition of the speaker's intentions. *A fortiori*, determining 'what is said' would require pragmatic interpretation as well. In such case, the formal semanticist faces the following problems. She could not argue that her object of study is independent from language-use (since this object would depend on pragmatic interpretation), and semantic interpretation would not play the role that it should play in the 'pipe-line' schema of communication (since pragmatic interpretation would be required to carry out semantic interpretation).

According to *semantic minimalism*, only 'objective' features of context can be utilized during the process of semantic interpretation. The notion of 'what is said' that minimalists accept, also known as a *minimal proposition*, is the literal meaning of a sentence that has the values of 'objective' features of context already fixed so that it becomes a truth evaluable content. Here I only focus on

[66]This consideration is supported by a wealth of empirical studies in the context of word learning (Bloom, 2000; Tomasello, 2003). Not only is it a far from trivial task to understand who or what a speaker is referring to, but it hardly ever occurs by means of pointing gestures. To understand what someone, in this case the child's caretaker, refers to seems intimately tied to understanding the relevant action that caretaker and child are mutually involved in. Or, when the child is merely observing, it requires him to monitor the caretaker's actions and goals in doing what she is doing.

two minimalist approaches: that of Cappelen's and Lepore's, and that of Emma Borg's.

Cappelen's and Lepore's minimalistic approach[67] allows only for a 'small' amount of context dependence, which must be restricted to a class of expressions that are 'genuinely context sensitive'.[68] Accordingly, if a sentence does not contain a context sensitive expression, the hearer does not need to know anything about the context in order to recognize the truth conditions expressed by that sentence. And if a sentence contains a context sensitive expression, hearers' knowledge of the literal meaning of the sentence tells them what they need to find out from the context of utterance.[69]

Emma Borg claims,[70] on the other hand, that there is such a thing as a pure semantic content, which must at least be truth evaluable, and which, if a context is required to determine truth evaluability, it is triggered by formal features of the sentence and can be determined simply on the basis of formal features of the context.[71]

[67]"The idea motivating Semantic Minimalism is simple and obvious: The semantic content of a sentence S is the content that all utterances of S share. It is the content that all utterances of S express no matter how different their context of utterance are. It is also the content that can be grasped and reported by someone who is ignorant about the relevant characteristics of the context in which an utterance of S took place. The minimal proposition cannot be characterized *completely* independently of the context of utterance. Semantic Minimalism recognizes a small subset of expressions that interact with contexts of utterance in privileged ways; we call these *genuinely context sensitive expressions*. When such an expression occurs in a sentence S, all competent speakers know that they need to know something about the context of utterance in order to grasp the proposition semantically expressed by that utterance of S, and to recognize the truth conditions of its utterance. These context sensitive expressions exhaust the extent of contextual influence on semantic content" (Cappelen and Lepore, 2005a, p. 143).

[68]A 'genuinely context sensitive' expression, according to Cappelen and Lepore, is an expression that pass several tests of contextuality: "the members of this set are the only expressions that pass our various tests for context sensitivity: the Inter-Contextual Disquotational Indirect Report Test, the Collective Descriptions Test (and the VP-ellipsis Test), and the ICD/RCSA Test" (Cappelen and Lepore, 2005a, p. 151). For details, see (ibid., chapter 7).

[69]It is worth noting that Cappelen and Lepore do not take the trouble to differentiate between 'objective' and 'perspectival/intentional' features of the context of use, making them a possible target of Borg's critique, as I showed before. This particular point makes their approach less attractive to formal semanticists, because they do not show how it can be adopted safely by those who conceive of a realm of semantic interpretation that can be studied and defined in strictly formal terms.

[70]"I will try to show that there is a level of semantic content which can be recovered simply on the basis of the formal features of the expressions produced together with a formal description of the context in which they are uttered, without any appeal to the use to which the speaker is putting those expressions (specifically, without any appeal to her mental, or intentional, states) [B.'s footnote 25: Bear in mind that, as stressed in the introduction, for something to count as *semantic* content for me it must reach the level of truth-evaluability. If it turns out that the only level of content which is recoverable on the basis of syntactic features alone fell below this level, then I would take it that formal semantics, as standardly conceived, was not possible]" (Borg, 2004, p. 33).

[71]For the details of Borg's way to deal with context dependence, see (Borg, 2004, §5.2).

The contextualist challenge, as I understand it, has two parts: (i) it intends to show that the context dependence of 'what is said' is not restricted to indexicals, but that it is pervasive in natural language; and (ii) it intends to show that the notion of context involved in such a pervasive context dependence is the context that includes both 'objective' and 'perspectival/intentional' features. We will come back to the arguments in favor of the contextualist challenge in a moment.

For the time being it is important to realize that the contextualist challenge depends on the notion of 'what is said'. For this is what is assumed to be relative to a context. The notion of 'what is said', as claimed before, is the bone of contention between minimalists and contextualists. Both minimalists and contextualists assume that 'what is said' constitutes the domain of study of semantics, but they attribute different properties to it.[72]

I will use the terms What-is-said$_{\text{sem}}$[73] and What-is-said$_{\text{prag}}$ to distinguish between the two kinds of 'what is said'. The distinction can be summarized as follows. The notion of What-is-said$_{\text{sem}}$ fulfills the following roles (Borg, 2004; Cappelen and Lepore, 2005a):

1. It is truth evaluable.
2. It is part of the input to the process that determines speaker's intentions.
3. It only depends on 'objective' features of context.
4. It plays a necessary role in communication.
5. It is a (tacitly known) psychological state.

The notion of What-is-said$_{\text{prag}}$ fulfills the following roles (Recanati, 2004, §§1.4–1.5 and §10.3):

1. It is truth evaluable.
2. It is the input to the process that determines implicatures (the so called "secondary pragmatic processes").
3. It depends on both 'objective' and 'perspectival/intentional' features of context.

[72]Compare the following quote: "Nathan Salmon distinguishes two senses of the phrase 'what is said': what is said in the strict and philosophical sense (the semantic content of the sentence, with respect to the context at hand) and what is said in the loose and popular sense (the content of the speaker's speech act)" (Recanati, 2004, p. 51). See also: " '[W]hat is said' is a technical term: it is exhausted by the literal meaning of the constituents of the sentence (the words), together with the contextual process of disambiguation and reference assignment. However, it seems that there is also a more intuitive way in which the notion may be understood, where it relates to an audience's grasp of what is asserted; 'what is said' intuitively seems to be the kind of thing which could be captured by instances of the locution 'In uttering s, U said that p' " (Borg, 2004, p. 111).

[73]Henceforth, I will use the terms "minimal proposition" and What-is-said$_{\text{sem}}$ interchangeably.

4. It plays a necessary role in communication.
5. It must be the object of conscious judgment of competent speakers when they use language in a context.

Note that both notions agree in that what they characterize must be truth evaluable. Moreover, both notions of 'what is said' are conceived to play a necessary role in communication. But there are substantial disagreements. What-is-said$_{\text{sem}}$ is the input to the process that determines the speaker's intentions, whereas What-is-said$_{\text{prag}}$ is the input to 'secondary pragmatic processes' (as Recanati calls them), such as those that draw implicatures. Another difference is that What-is-said$_{\text{sem}}$ is (usually) not consciously available to the interpreter, whereas one of the defining characteristics of What-is-said$_{\text{prag}}$ is that it must be so available. I will come back to this issue in a moment.

This distinction between two kinds of 'what is said' has been conceived as a way to solve the debate between contextualism and minimalism. It has been claimed that the distinction amounts to a clarification as to what each of these semanticists sees as their proper object of study.[74] Formal semanticists and semantic minimalists ought to study a notion of 'what is said' that is independent from the speaker's intentions. Contextualists study a notion of 'what is said' that is constituted by the speaker's intuitions that are consciously accessible in situations of language use.

1.4.3 Psychological reality?

However, contextualists accuse minimalists to study a spurious phenomena. This claim is used by Recanati in his criticisms against minimalism, in the guise of a demand of psychological plausibility. Such a demand is closely intertwined with another of Recanati's pivotal concept, namely, the availability claim, to which we will come back in more detail later on. Availability claims that 'what is said' "must be intuitively accessible to the conversational participants" (Recanati, 2004, p. 20). This assumption, together with a great deal of examples, leads to the conclusion that the content of the utterance of a sentence (i.e. 'what is said') depends on the speaker's intentions.

To give an example, consider the case of my friend that comes over to my place in the morning, to whom I offer breakfast and he replies with the sentence:

[74]Consider what Borg claims about this issue: "The [contextualist's] main argument [...] is really, it seems, an argument about intuitive truth-conditions, hence it holds against the enterprise of formal semantics only on the assumption that the subject matter of formal semantics must be intuitive truth-conditions. However, [...] we will reject this conflation of intuitive truth-conditions with semantic content. On this picture, judgments of intuitive meaning for an utterance emerge only at the point of interface between the output of our language faculty (which may not surface to consciousness in a given linguistic interchange) and a vast range of other information available to the agent" (Borg, 2004, p. 262).

(4) I have had breakfast.

Our intuition about the meaning of (4) is not a minimal proposition, which should be independent from the speaker's intentions and asserts that my friend has had breakfast at some point in time previous to this utterance. Rather, our intuition is that (4) means that my friend has had breakfast *this morning*—which *implies* that he does not want breakfast. In this example, our 'semantic intuition' does not deal with the purported minimal proposition, Recanati claims, but with a proposition that incorporates the speaker's intentions.

Moreover, Borg presents a convincing case for the claim that speech reports respond to the occasion of the utterance that is being reported.[75] She gives the following example (Borg, 2004, pp. 112ff) : it seems evident that "given the right sort of context of utterance [of the sentence "Blair lives at No. 10"], any of the following [reports] (among an indefinite number of others) may be acceptable:

(5) Jim said that Tony Blair lived at No. 10 Downing St, London, UK.

(6) Jim said that the current Prime Minister lives at No. 10.

(7) Jim said that that man lives there.

(8) Jim said that Baby Leo's father lives in No. 10.

(9) Jim said that the most right-wing Labour leader to date secured power where other, more left -wing, predecessors had failed.

(10) Jim said that he knows about British politics." (p. 115, numeration of examples modified).

Neither 'semantic intuitions' nor speech reports deal with minimal propositions. The question arises what is the psychological plausibility of minimal propositions?

The formal semanticist conceives of language as a code that pairs phonological and syntactic descriptions with literal meanings. These literal meanings are conceived to be independent from the speaker's intentions and to constitute a natural kind that is determined by the meaning component of this code, conceived as a mental state. This mental state, though not consciously accessible, plays the role of being the input to another mental process, namely, pragmatic interpretation. But whereas this claim has the form of an empirical hypothesis, it is almost never discussed as such; instead, it is a philosophical thesis that is more often implicitly

[75]However, in line with her minimalistic stance, she claims that "it is clear from even a momentary survey of the facts concerning reported speech in ordinary language that they diverge wildly from the kinds of features which can plausibly be taken to be the concern of semantics" Borg (2004, pp. 114). This assertion depends on the assumption that semantics deals with something different from reported speech.

assumed and, when discussed, it is argued for on *a priori* grounds (e.g., Borg, 2004; Soames, 2010).

It seems, moreover, that the formal semanticist can maintain the psychological plausibility of semantic interpretation paying the price of positing a difference between the 'conscious mind', which has access to the content of sentences in contexts of use, and a sort of 'mechanic mind', which codes and decodes minimal propositions. Such a stance, however, leads us straight into what Jackendoff (1987) has called the 'mind-mind' problem, viz, since Descartes, philosophy created the problem of accounting for the mind-body problem; in turn, the cognitive revolution created the problem of accounting for the automated, non-introspectable mechanisms that, purportedly, constitute the mind and our own phenomenological experiences of the world and of ourselves.

What is more, in order for the formal semanticist to heed the semantic minimalist's advise to confine herself to this domain,[76] a very fine-grained analysis is needed to determine the 'semantic purity' of the intuitions that lie at the foundations of all landmark theories, such as Dynamic Semantics or Inquisitive Semantics. But the risk is great that getting rid of these intuitions amounts to throwing the baby along with the bath water. To be sure, to carry out such a revision is a task that I do not need to do here.[77]

1.4.4 The contextualist challenge

Let us review a couple of examples widely used to illustrate the contextualist challenge. Consider sentences (11) and (12) (Recanati 2004, p. 8; Borg 2004, p. 34):

(11) I've had breakfast.

(12) You are not going to die.

[76]Compare the following quote from Borg: "[M]any moderate formal semanticists clearly feel there is not a problem with a formal theory appealing to speaker intentions (just so long as such an appeal is syntactically triggered). However, it seems to me that there are problems involved in such a move and thus that moderate formal semanticists should, in fact, limit their appeals to those features of a context of utterance which are non-perspectival or objective. My reasons for thinking this are two-fold: first, it seems to me that admitting speaker intentions as semantically relevant runs counter to the general aims of formal semantic theorizing. Secondly, and most importantly, admitting speaker intentions as semantically relevant runs counter to the claims of modularity for semantic processing" (Borg, 2004, p. 31). To use the kind of intuitions based on context of use is what Cappelen and Lepore (2005a, ch. 4) consider the root of contextualism, and therefore they urge formal semanticists to get rid of it. This starting point, so natural for the formal semanticist, is what they call the *mistaken assumption*, which asserts that "[a] theory of semantic content is adequate just in case it accounts for all or most of the intuitions speakers have about speech act content, i.e., intuitions about what speakers say, assert, claim, and state by uttering sentences" (Cappelen and Lepore, 2005a, p. 53).

[77]But is one that I deem doomed. My discussion in the next chapter on incomplete understanding points to the fact that intuitions cannot constitute a legitimate domain as regards language and meaning. For discussion, see the Final comments.

If a friend comes over to my place early in the morning and I am about to eat my breakfast, it is natural for me to offer him food. If he answers by uttering (11), I take it that he has just eaten. However, the minimal proposition seems, at least *prima facie*, blatantly useless, since it would mean that my friend has had breakfast on at least one occasion before the time of utterance. To take another example, if a mother wants to comfort her child when he comes up to her crying because of a minor cut in his finger, she might say (12) with a tender tone of voice. However, clearly, sentence (12) is literally false and, perhaps, cruel—we are all going to die.

Examples (11) and (12) are intended to show how strange a minimal proposition is, and how little use it is in a communicative context. Moreover, they intend to show that understanding them requires substantial sensitivity to features of context, *and* that the features needed to arrive to what is to be grasped in these situations are not coded by any lexical item in the sentence. Some further examples are the following:

(13) John hates the piano.

(14) John's car is red.

Recanati argues that sentence (13) cannot have truth conditions independently of the context of use:

> [A] piano is certainly an object that *can* be hated, however strictly one construes the predicate 'hate'. Still, some contextual enrichment is in order, because to hate the piano is to hate it *under some aspect or dimension*. One may hate the sounds emitted by the piano, or one can hate playing the piano, or one can hate the piano as a piece of furniture (Recanati, 2005, p. 181, emphasis in the original).

Example (14) shows two kinds of contextual dependence. The first one concerns the possessive "John's car":

> A possessive phrase such as 'John's car' means something like the car that bears relation R to John, where 'R' is a free variable. The free variable must be contextually assigned a particular value; but that value is not determined by a rule and it is not a function of a particular aspect of the narrow context. What a given occurrence of the phrase 'John's car' means ultimately depends upon what the speaker who utters it means (Recanati, 2004, p. 56).

The second one concerns the unambiguous predicate "red." The point, once again, is that the literal meaning of "red" cannot contribute to the truth conditions of a sentence unless enough context, determined by the speaker's intentions, is fixed:

> [I]n most cases the question arises: what is it for the thing talked about to count as having that color? *Unless that question is answered, the utterance ascribing redness to the thing talked about (john's car, say) will not be truth-evaluable.* [...] To answer such questions, we need to appeal to background assumptions and world knowledge. Linguistic competence does not suffice: pragmatic fine-tuning is called for [...] We must go beyond linguistic meaning, without being linguistically instructed to do so, if we are to make sense of the utterance (Recanati, 2005, pp. 183f, emphasis in the original).

The previous examples are just a handful of examples that show that there are cases of words and expressions, different from the traditional indexicals, the interpretation of which depends on context and, importantly, that this context contains 'perspectival/intentional' features. However, to reach the full-blwon claims (i) and (ii) defined at the begining of this subsection, one more step is still required: to show that this is a pervasive phenomenon not limited to the previous examples. The way to go about doing this is by producing more and more examples of this sort of context dependence. I will not do this here (but see Carston, 2002; Recanati, 2004; Travis., 2008).

Suffice it to say that the issue of context dependence has been conceived to have different scopes. Those who accept that context dependence involves only a small portion of expressions and sentences (minimalists), those who accept that context dependence may attain a significant proportion of expressions and sentences (moderate semanticists), and those who accept that no sentence has its truth conditions fixed without consideration of the speaker's intentions (radical contextualists).[78]

1.4.5 The availability approach

The availability approach is Recanati's methodological starting point for developing his semantic theory. It is also one of his most cherished weapons against minimalism. Recanati's *motto* is as follows:

> *Availability:* What is said must be intuitively accessible to the conversational participants (unless something goes wrong and they do not count as 'normal interpreters') (Recanati, 2004, p. 20).

[78] Compare: "[O]ne can, by simply shifting the background interests ascribed to the conversational participants, change the truth-conditions of a given utterance, even though the facts (including the target-situation) don't change, and the semantic values of indexicals remain fixed" (Recanati, 2005, pp. 191f). See also: "What you say (if anything) in describing things in given terms always depends on the circumstances of your saying it. For you to have made good enough sense to have said something either true or false, circumstances must do work which they *can* always fail at [...] If, pointing to a thoroughly overt sky, someone sighted says, out of the blue, 'The sky is blue', there may be *no* answer to the question what he said, or none which settled how things would be if he were right—even if there *are*, as there are, *some* truths that could sometimes be told in so describing an overcast sky" (Travis., 2008, pp. 9).

What is said is 'intuitively accessible' in the sense that it is the object of conscious judgment. Such a conscious judgment is made by a 'normal interpreter' and it concerns what the speaker says in the context of use.

Recanati presents three reasons to claim that 'what is said' should have the characteristic of availability. The first one is that the opposite view lacks generality (Recanati, 2004, p. 11). He conceives the opposite view as the claim that 'what is said' is not available and that only implicatures of 'what is said' are available. To give an example, when a hearer interprets the sentence "John has three children" he is not aware of the minimal proposition expressed by it. Such a minimal proposition must be compatible with the meaning of the sentence "If John has three children, he can benefit from lower rates on public transport," implying that it has to be something like John has at least three children. But Recanati argues, in my view correctly, that an interpreter of the sentence "John has three children" is not aware of such a minimal proposition, and takes the sentence to mean that John has exactly three children. To maintain that the minimal proposition plays a role in the interpretation of this sentence, the customary move is to claim that the interpreter is aware of an implicature, and that the minimal proposition was used to derive it.[79]

Recanati claims that this view does not have generality. For this is *not* like other cases, such as interpreting "I am French" as an answer to the question "Do you know how to cook?". In this case, according to Recanati, the interpreter is aware both of what "I am French" says and of what it implies, namely, that the speaker knows how to cook. Therefore, to treat the proposition that one is aware of as a form of implicature derived from the minimal proposition imposes the extra task of explaining why some implicatures (the 'real' ones according to Recanati) start from a notion of 'what is said' that is available, while others (the 'fake' ones according to Recanati) start from a notion of 'what is said' that is not available.

The second reason to claim that 'what is said' should have the characteristic of availability is that, according to Grice, 'what is said' must be the input to pragmatics. Recanati's interpretation contends that pragmatic consists of drawing inferences, which involve reflective capacities. Recanti calls them 'secondary pragmatic processes' and claims that, as such, they cannot occur if the starting point were not truth evaluable and consciously accessible (Recanati, 2004, p. 39).

The third argument in favor of the availability approach is the claim that 'what is said' is a form of non-natural meaning.[80] According to Recanati, who follows in Strawson's footsteps, non-natural meaning must be "open to public view," and being "open to public view" is equated with being available.

[79] See Borg (2004, §4.6).

[80] "The view that 'saying' is a variety of non-natural meaning entails that what is said (like what is meant in general, including what is implied) must be available—it must be open to public view. That is so because non-natural meaning is essentially a matter of intention-recognition. On this view what is said by uttering a sentence depends upon, and can hardly be severed from, the speaker's publicly recognizable intentions" (Recanati, 2004, p. 14).

There are a number of weaknesses to Recanati's availability approach. To begin with, Recanati does not give any details as to what being conscious means. This is something that I find regrettable, for the topic of consciousness is a large one and it seems advisable to delimit, at least in a rough way, what one will be dealing with. At one point Recanati draws an analogy with the case of vision: "[l]ike the visual experience, the locutionary experience possesses a dual character: we are aware both of what is said, and of the fact that the speaker is saying it" (Recanati, 2004, p. 16). This might seem like a way to clarify what he means with his claim that what is said is 'intuitively accessible', but is it really?

The analogy with vision is contentious. It is not clear what corresponds to the speaker in the analogy with vision: there does not seem to be a producer of what is perceived as there is a producer of what is said, namely, the speaker. It could be claimed that the producer of what is perceived is the agent that performs the perceived action, and hence that the performer corresponds to the speaker in the analogy. This cannot be the case, for we do not perceive the action and the performer as two separate things—whereas what is said and the fact that the speaker is saying it are not perceived as a whole[81]—, so it is not clear what the dual character of the visual experience in this case amounts to. And if what corresponds to the producer of what is perceived is the perceiver, the dual character is plainly false: we usually are aware of what we perceive, but not aware that we are perceiving it.

Moreover, Recanati's claim of availability (that what is said must be intuitively accessible to the conversational participants) is superficial. For he misses an important distinction. More often we do not reflect on what the speaker is saying. We do not experience the flow of communication as a situation where meanings are things separated from words, nor do we think of communication as a situation in which the speaker utters words with these meanings. This does not mean that we are unconscious, as if we were asleep. But our engagement with fluent communication is usually unreflective, our actions being 'fast' and immediate, and there is no consideration of distinct elements of the situation or of a plan of action. At the same time, it is intuitive enough that we sometimes pause and reflect on what someone is saying, either to make corrections, to ask for justification of what she says, or to give explanations. So both reflective and unreflective experiences seem to be associated with linguistic understanding. Recanati misses this difference, and *a fortiori*, an account of it.

The weaknesses of Recanati's availability approach can be further elaborated as follows. The first argument in favor of the availability approach seems sound, but it is more of a criticism of minimalism than an argument in favor of the availability approach. The other two arguments are highly contentious.

[81] As we experience a heated discussion, say about politics, we are not aware (or paying attention) to the fact that the speaker is saying what she is saying, at least not all of the time, for our focus is on the theme of discussion. Compare this experience with the experience of perceiving a ballet dancer during a performance.

The second argument in favor of the availability approach, namely, that 'what is said' must be the input to a process that draws inferences and that, as such, this process involves reflective capacities, seems to be more of a terminological point than a real argument. For a reason is needed why inferential capacities need to be reflective.

The third argument seems equally problematic. It says that 'what is said' is a form of non-natural meaning; that it must be "open to public view;" and that being "open to public view" is the same as being available. However, it actually begs the question of availability. For it has to be assumed that something can only be public if it is consciously available. But certainly the formal semanticist, for whom knowledge of language is a matter of tacit knowledge, cannot agree with this assumption. This tacit knowledge, although unconscious, can be instantiated in different individuals and is then assumed to be public.

An important aspect of Recanati's availability approach is that the conscious judgments that are allowed into the empirical domain of semantics are those of 'normal interpreters'.[82] However, Recanati's use of this notion is problematic. Recanati claims that a normal interpreter's understanding is "tacit knowledge, not the sort of 'conscious awareness' [discussed] in connection with secondary pragmatic processes" (Recanati, 2004, footnote 28, p. 20). Does this mean that the normal interpreter does not have conscious access to what is said? Recanati's position could benefit from a clarification of this inconsistency.

More importantly, even if speakers have conscious access to what is said, they do not have conscious access to the fact that they are 'normal interpreters', and then we do not have a criterion to decide who's intuitions determine the subject of study. Cappelen and Lepore make a compelling statement to this effect:

> [W]hat's *normal* is not something speakers have psychological access to. What's normal need not 'be in the speaker's mind when the sentence is understood'; it certainly needn't figure into any psychological process that the speaker goes through when understanding (an utterance of) a sentence. This is so for several obvious reasons; here are perhaps the most obvious ones:
>
> - A speaker can be abnormal, but think that she is normal.
> - A speaker might know that she is not normal, but not know what normal is.

[82] "I have equated what is said with what a *normal interpreter* would understand as being said, in the context at hand. A normal interpreter knows which sentence was uttered, knows the meaning of that sentence, knows the relevant contextual facts (who is being pointed to, and so on). Ordinary users of language *are* normal interpreters, in most situations. They know the relevant facts and have the relevant abilities. But there are situations [...] where the actual users make mistakes and are not normal interpreters. In such situations their interpretations do not fix what is said. To determine what is said, we need to look at the interpretation that a normal interpreter would give. This is objective enough, yet remains within the confines of the pragmatic construal" (Recanati, 2004, pp. 19f, emphasis in the original).

- A speaker might think that she is normal, but not be.
- More generally: even for speakers who are normal and know that they are normal, they might not know what counts as a normal understanding of some specific feature of a context that they happen to find themselves in.

(Cappelen and Lepore, 2005b, pp. 217f, emphasis in the original).

Far from settling the debate, I believe that the failure to justify the availability approach gives more elements of consideration to an assessment of literal meanings. It should be borne in mind that it is a false dilemma to think that there are only two viable alternatives, namely minimalism and contextualism, and that we should take sides. I will come back to a criticisms of contextualism in the Final Comments. In the next chapter I will focus on a criticism of formal semantics and semantic minimalism.

***

Any explanation of what the status of a given discipline is consists in providing answers to questions such as "What does it study?," "How should this study be conducted?," "What aspects of the theories have a 'real' counterpart?," "What data can be used to confirm or falsify theories?". We have characterized four different approaches to formal semantics and have argued that only one of them attempts to explain the status of the discipline—only one of them addresses the above-mentioned questions.

The gist of this explanatory approach, dubbed 'the empirical science view' of formal semantics (see Stokhof, 2002a), is the commitment to the idea that, despite its Fregean ancestry, semantics can be a part of a psychological study of language. It purports to be an empirical study of the abilities that underwrite production and comprehension of language—i.e., linguistic competence.

There are two central characteristics underwriting the main tenets of this approach that deserve closer scrutiny. They are the commitment to the 'individualistic frame of reference' and the commitment to a kind of 'naturalization' of meaning. The 'individualistic frame of reference' means that the discipline must be confined to the study of properties and abilities that can be ascribed to individual agents. The kind of 'naturalization' of meaning consists in claiming that meaning is a natural kind. The most common way to cash out these ideas is to conceive of meanings as mental representations or processes that are, or supervene, ultimately, on brain activity. Note that meaning, thus conceived, not only is a natural phenomenon, but is also one that can be studied in terms of properties of individual agents.

The commitment to the 'individualistic frame of reference' arises in three interrelated fronts. To begin with, when the formal semanticist borrows assumptions

from Chomskyan linguistics, in particular Chomsky's theoretical notion of competence, she is also borrowing Chomsky's commitment to the claim that linguistic competence is a mental faculty.

The 'individualistic frame of reference' is also prominent in the 'facts' about language and linguistic competence—i.e., infinity of language, systematicity, and productivity—that are allegedly explained by this conception. Take, for instance, the argument from infinity. One of its premises is that a competent speaker has knowledge of the entire language. Where does such a supposition come from if not from the preconception that language is a mental, and *a fortiori* individual,[83] faculty? Consequently, semantics, as a mental faculty, can be studied only in terms of properties of individual agents, given that the phenomenon itself is conceived as a property of individual agents.

Moreover, the formal semanticist's methodology is based on 'semantic intuitions'. Not only is it a contentious *a priori* kind of methodology, but it is also one that presupposes that, via introspection, it is possible to study the semantics of natural language. Such a methodology would be worthless, or at least hopelessly incomplete, if it did not assume that via introspection it is possible to have access to the entire object of study. In turn, this entails that the object itself can be apprehended by a single individual. It follows that the object of study of semantics is grounded in properties of individual agents, which entails the presupposition that the study of this object can be carried out in terms of a study of the properties of individual agents.

In the following chapter I will argue against the formal semanticist's account of linguistic information. In order to carry out such assessment I first need to set up the criteria of adequacy. However, we must say upfront that setting up criteria is not an independent business, since the criteria itself arises from a position that already contains a different conception of linguistic information. I shall develop such conception in more detail in chapter 4, but it is worth noting that such a conception rejects the two above-mentioned characteristics of the formal semanticist's approach. That is, such alternative conception of linguistic information contents that it is a 'complex phenomenon' that is intrinsically related to our experiences of language-use; whence the conflict with the 'individualistic frame of reference' and the 'naturalization' of meaning.

[83]This step from 'mental' to 'individual' certainly works for Chomsky's philosophy. However, we should bear in mind that the 'mental' need not be understood as excluding a non-individualistic account.

Chapter 2
Understanding and Communication

2.1 Introduction

A criticism is always a criticism from somewhere. A proper understanding of the present work requires to take this *motto* into account. In these pages a criticism against the formal semanticist's picture of language, linguistic competence, and linguistic communication shall be developed from what I call a "descriptive view" of language. I shall then begin with a very brief motivation for such a view.

2.1.1 Motivating the criteria of adequacy

Why is it important for us to carry out a study of language? The answer assumed here is that a study of language is important because language partly make us into what we are. One way to understand why language make us into what we are is to say that language is somehow related to what concepts we use and recognize. Accordingly, the criteria of adequacy that I shall propose in a moment arise from the idea that a study of language is important to the extent that it provides an account of the nature of our concepts and our relation to them.

Furthermore, it is assumed here that our concepts are partly characterized by the ontology that they presuppose. In order to motivate our criteria of adequacy, let us make a small digression into some features of the ontology presupposed by our concepts. I must hasten to make clear, however, that there is a principled difference between the ontology presupposed by our concepts and metaphysics as such. In fact, even if someone puts forth a metaphysical claim, say by arguing 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 language presupposes 'objects' that do not belong to the metaphysics that she tries to defend. Moreover, the question as to what metaphysics provides the framework of a particular ontology presupposed by our concepts need not be raised in a discussion of the ontology presupposed by our concepts. To put it another way,

the study of the ontology presupposed by our concepts can remain, by and large, silent about metaphysics as such. For a study of the ontology presupposed by our concepts is not in the business of making claims as to what the ultimate constituents of the world, the universe, or reality as such, are.[1] Thus, the ensuing discussion does not aim to take a stance as regards metaphysical commitments.

Now, for ease of presentation, let us say that if C is a concept, "$[\![C]\!]$" refers to the concept's extension and "$x \in [\![C]\!]$" refers to the claim that an object x belongs to the extension of C.

The ontology presupposed by a concept can be classified in terms of the factors required to determine the concept's extension. To begin with, there is a kind of ontology, namely natural kinds, for which instruments (e.g., spectrometer, test strip, gas analyzer, etc.) can be build to identify (more or less accurately) whether $x \in [\![C]\!]$ or not. The instrument is regimented by conventions and norms of use, but the assumption is that $x \in [\![C]\!]$ (or $x \notin [\![C]\!]$) holds independently of whether the instrument is used. The instrument is used to *discover* that $x \in [\![C]\!]$.

This reasoning can be extended to concepts for which our own perceptions are the instrument used to identify whether $x \in [\![C]\!]$ or not. The ontology presupposed by these concepts is such that whether $x \in [\![C]\!]$ or not is independent from our perceiving that this is so. *A fortiori*, this ontology is independent from our use of sentences such as "This is a 'C' " (by pointing to x).

Now, there is a different kind of ontology, I shall call them *symbolic kinds*,[2] which seems closely related to our use of words, expression, gestures, and symbols. (Henceforth I will refer to words, expressions, gestures and symbols as *signs*.) This claim should not be understood as saying that the ontology presupposed by our concepts is partitioned between natural and symbolic kinds: other kinds might well exist, though I shall only discuss these two.

The ontology presupposed by symbolic kinds requires that the sign that expresses the concept be used appropriately so as to stipulate that $x \in [\![C]\!]$. In this case the assumption is that $x \in [\![C]\!]$ depends on the appropriate use of the sign that expresses the concept—i.e., that $x \in [\![C]\!]$ is created (partly) by the uses of signs.

For example, whether a soccer player gets a yellow card or not in a given championship depends, *inter alia*, on the referee 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, *inter alia*, on the use of a gesture that expresses the concept "to-have-gotten-a-yellow-card." Another example is to be granted a visa

[1] To be sure, it is true that a particular natural language metaphysics may presuppose 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.

[2] I will not pursue here a comparison between symbolic and social kinds; it shall remain as a topic for future research.

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, *inter alia*, on the use of a sign (e.g., a stamp or a letter) that expresses the concept "to-have-been-granted-a-visa." Yet a different example is that a good—e.g., food, furniture, clothes, etc.—is worth a determinate price (in a given currency). The price is fixed in supermarkets by stickers or bar-codes, and in an open air market by the seller's statement as to how much a good is worth. That is, if x is a good and C is the concept "to-be-worth-p (given a particular currency)," the fact that $x \in [\![C]\!]$ depends, *inter alia*, on the use of a sign (e.g., the seller's statement) that expresses the concept "to-be-worth-p."

Given that parcels of the ontology that our concepts presuppose, at least *prima facie*, somehow depend on our uses of language, a study of language must account for such dependence.

The stance suggested by the previous ideas does not require metaphysical commitments. It is neutral as to whether our language and concepts are ultimately nothing over and above physical entities—maybe because what exists out there in the universe are only physical particles moving in the space. However, it is not neutral as regards the requirement that our account of language should explain why some of our concepts depend, or seem to depend, on our uses of language.[3]

This stance is relevant to an independent characterization of language, meaning, and understanding. Given that the meanings of signs can be identified with concepts, we can claim that some meanings of some signs are symbolic kinds. A theoretical account of meaning is, therefore, accountable to explaining this informal notion of symbolic kinds.[4]

The concept of understanding is closely related to the concept of meaning. I take it that understanding a sign consists, at least in part, in the recognition of the extension of the meaning of the sign. Let us recall in passing that we have identified the meaning of a sign with a concept. One does not attribute understanding of the concept, say, chair to someone that does not have the ability to

[3]It might be important to bear in mind that physicalism, i.e., "the thesis that everything is physical, or as contemporary philosophers sometimes put it, that everything supervenes on, or is necessitated by, the physical" Stoljar (2009), need not endorse explanatory reductionism, 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" (*Idem*). This remark gives substance to the above-mentioned stance's being neutral as regards metaphysical commitments. For one can be a physicalist or not, and yet reject explanatory reductionism (which is rejected by the above-mentioned stance).

[4]Furthermore, the concept of meaning plays a role in situations where, e.g., we use a dictionary to justify what the meaning of a particular expression is. A study of language and, in particular, a study of the semantics of natural language, is accountable to explaining these situations, where the concept of meaning plays an important role in our use of language. I will come back to this requirement in chapter 4.

recognize chairs (although errors can be conceivable). Or one does not attribute understanding of the concept measuring to a person that cannot recognize the simplest acts of measuring (e.g., using a ruler or a meter, or an arbitrary unit of comparison). Since some concepts are symbolic kinds, an account of understanding is accountable to the particularities of the recognition of this kind of concepts. Symbolic kinds depend on our uses of signs. Hence, an account of understanding is accountable to how we carry out the recognition of uses of sings.

2.1.2 Criteria of adequacy

The use of a sign depends, among other things, on how we experience situations where the sign is used and how we react to these experiences (by doing or saying something). Even if in the end the use of a sign is shown to be nothing over and above some peculiar brain activity, an account of such an use should be compatible with a description of these experiences and reactions. Hence, our first criterion is that an account of language should preserve both our descriptions of our experiences of language-use in everyday practices (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 (what can be taken as) her experience of language-use).[5]

We can try and make the gist of this criterion clearer by means of an analogy with accounts of perception. Suppose that the philosophical problem we were to address is to explain human perception. The present criterion of adequacy will rule out the account of perception that consisted only of a mathematical mapping from a two dimensional array into a three dimensional one. The reason is that the three dimensional array still needs to be perceived from a human perspective, and the explanation of this perspective is precisely what the account was required to explain in the first place. Any account of perception is required to explain that when we perceive a pencil, a bottle, or a tree, etc., we do not (only) 'perceive' a 3D matrix of colors. When we perceive an object we cannot help but 'project' onto it some possible uses (e.g., to write with it, to drink some beverage from it, to climb it, etc.). We are also required to explain why our experience modifies our perceptions. For instance, when we see a letter for the first time we only see a funny drawing, but after we learn how to read we cannot help but see the letter as a letter (and maybe also imagine that we hear a sound or that we make a sound). These are some examples of descriptions of experiences that the account of perception as a mapping does not preserve.

[5]No doubt my appeal to these descriptions will greatly benefit from an empirical study of how different groups of people make descriptions of their experiences when using language and their reactions to uses of language. Such an empirical study goes beyond the scope of this study. The reader can use her own descriptions in her assessment of my arguments.

Second, and heeding the motto that the fewer theoretical concepts 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. Note that since an account of language might very well use theoretical distinctions, the second criterion is a particular case of the first one.

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 concerning 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 our 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.

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 uses of signs, and our descriptions of our reactions *to these experiences*. Hence, such descriptions are not couched in the 'objective terms' that behaviorism propounds as 'respectable'. The criteria recognizes the interdependence between reactions and experiences and does not attribute primacy to either one of them.[6]

[6]This claim will become clearer in my discussions of communicative success (see §2.3.3) and

2.2 Against the compositional structure of linguistic competence

2.2.1 Outline of the argument

The formal semanticist's achievement consists in the stipulation of a number of semantic rules, according to which the meanings of complex expressions are computed from the meanings of their constituents. She usually claims (or should claim if she is to attribute empirical relevance to her achievement (see §1.1)) that these semantic rules account for linguistic competence—i.e., the ability to understand and produce language.[7] The formal semanticist claims that linguistic competence, as far as she might be concerned, consists in knowledge[8] of a (finitely representable) set of syntactic and semantic rules that generate all meaningful sentences of the language—I shall call this claim the formal semanticist thesis about linguistic understanding.

The formal semanticist's thesis about linguistic understanding: A is able to understand (produce) a sentence S in a language L if and only if A knows the rules of generation of the literal meaning of S in L.

It is important to bear in mind that, although the thesis has the form of a *definition*, it is no more than a *theoretical explanation*. Thus, the thesis deals with three elements: (i) an informal notion of understanding mentioned in the left-hand side; (ii) an articulation of theoretical concepts presented in the right-hand side (i.e., the identification of a language as a set of rules, the reification of

language intelligibility (see §3.1.3).

[7] Davidson (1969) claims that "[i]t is conceded by most philosophers of language, and recently by some linguists, that a satisfactory theory of meaning must give an account of how the meanings of sentences depend on the meanings of words. Unless such an account could be supplied for a particular language, it is argued, there would be no explaining the fact that we can learn the language: no explaining the fact that, on mastering a finite vocabulary and a finitely stated set of rules, we are prepared to produce and to understand any of a potential infinitude of sentences. I do not dispute these vague claims, in which I sense more than a kernel of truth. Instead I want to ask what it is for a theory to give an account of the kind adumbrated" (quoted from Davidson (1984, p. 17)). Chierchia & McConnell-Ginet (2000), when discussing some general properties of semantic competence, claim (p. 7): "Whatever linguistic meaning is like, there must be some sort of compositional account of the interpretation of complex expressions as composed or constructed from the interpretations of their parts and thus ultimately from the interpretations of the (finitely many) simple expressions contained in them and of the syntactic structures in which they occur." Moreover, Ema Borg, in her *Minimal Semanitcs* (2004, p. 56) claims: "The best explanation for the generative nature of our linguistic understanding seems to be that the meaning of complex wholes must be determined by the meanings of their parts and their mode of composition. For if this is the case, then it is no mystery why our understanding of complex linguistic items has an indefinite range."

[8] 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.

literal meaning, the stipulation that a literal meaning is generated by the rules of language, and the appeal to a relation between the subject and such rules of language); and (iii) a relation between the two, namely, that the articulation of these theoretical concepts explains the informal notion.

We will assume here that the informal notion of linguistic understanding can be characterized as in §2.1.1. Given that we are not dealing with a definition of linguistic understanding, but with a theoretical explanation of an informal notion, this explanation has to be assessed against our criteria of adequacy. I shall show that the formal semanticist's thesis does not meet this criteria of adequacy.

The gist of the criticism will be that our descriptions of language-use in everyday life are incompatible with the formal semanticist's thesis. For the thesis stipulates that speakers know the rules of their language and, hence, that they understand the entire language. Moreover, the formal semanticist claims that such a knowledge is one of the factors on which language-use depends. This picture of linguistic understanding clashes with our descriptions of language-use in everyday life, which show that people are not completely competent with (i.e., people have incomplete understanding of) many of the expressions that they nevertheless successfully use.

However, the formal semanticist might easily fail to see the point of this criticism. For she will immediately fall back to her distinction between structural and lexical meanings. She will postulate that the competent speaker has complete knowledge of structural meanings, but incomplete understanding of lexical meanings. Since the formal semanticist claims that her achievement is addressed only to structural meanings, she will claim that she never attempted to explain 'complete' linguistic competence. Hence, she could claim that the descriptions of our language-use need not conflict with the thesis.

The argument has to be complemented, therefore, with a more direct criticism of the formal semanticist's thesis. For when she claims that she never attempted to explain 'complete' linguistic competence, she assumes that there is a legitimate notion of linguistic competence that she is addressing instead. This notion might not be the notion that we independently characterized above, but she holds on to the conviction that knowledge of semantic rules is a legitimate explanation of our linguistic abilities. Thus, the second criticism will be addressed to the purported 'intuitions' that, in the formal semanticist's view, give rise to a characterization of our linguistic abilities in terms of rules. For rhetorical purposes, I shall start with this criticism of the intuitions that purportedly give rise to the formal semanticist's thesis, and next shall present why this thesis does not meet the criteria of adequacy.

2.2.2 Criticism of the formal semanticist's achievement

The formal semanticist claims that her thesis explains a number of 'intuitions' about linguistic competence, namely, systematicity, the infinity of language, and

productivity. I shall argue that whatever linguistic facts there are behind these purported intuitions, they do not force on us the conception that language is a set of sentences generated from a set of rules and that linguistic competence is knowledge of these rules. Henceforth I shall refer to this conception as the 'compositional structure of linguistic competence'.

Systematicity

Let us consider the claim that in order to explain 'systematicity' we must conceive of linguistic competence, inasmuch as the formal semanticist may be concerned, as knowledge of a set of syntactic and semantic rules. But before we examine more closely the claim of systematicity, we should pay attention to a feature of the formal semanticist's conception of linguistic competence. If linguistic competence consists of knowledge of semantic (and syntactic) rules, we must draw a distinction between structural semantics and lexical meanings. For semantic rules are defined on semantic categories of expressions, which constitute the structural, or formal, meanings of these expressions, not on the 'full' meaning of individual expressions, which constitute their lexical meanings. Semantic rules are, as it were, 'blind' to lexical meanings. According to this distinction, different (non-synonymous) expressions receive different lexical meanings, although they could belong to the same semantic category and thus have the same structural meaning.

To give an example, the formal semanticist is not concerned with the analysis of the meaning of the sentence "Theaetetus flies" as such, but only with the way its meaning depends on the meaning of "Theaetetus" and "flies." Moreover, he or she is not concerned with what the 'full' meaning of "Theaetetus" or "flies" might be, but only with what their contribution is to the meaning of the sentence. The 'full' meaning of "Theaetetus flies" stands in the same footing as the meaning of "Odysseus sleeps;" they are to be explained by the same rules. The important things are: (i) the different kinds of entities that linguistic expressions refer to, e.g., entities, properties, etc.âĂŤi.e., a semantic categoryâĂŤ; and (ii) how these kinds can be used to yield the meaning of complex expressions.

A very important remark is that this point is valid even if we allow for semantic sub-categorization, that is, if we split up a category into different sub-categories that have different semantic properties. For instance, Montague distinguishes, by means of "meaning postulates," between intensional and extensional transitive verbs, e.g., "seek" and "kiss." The point remains that these sub-categories do not determine the 'full' meaning of individual expressions. Semantic rules, even if dependent on sub-categories, are 'blind' to lexical meanings.

The claim of systematicity is as follows: "What we mean when we say that linguistic capacities are systematic is that the ability to produce/understand some sentences is intrinsically connected to the ability to produce/understand certain others [...] You don't, for example, find native speakers who know how to say [...] that John loves the girl but don't know how to say [...] that the girl loves John" (Fodor and Phylyshyn, 1988, p. 37).

As Scholz and Pullum (2007) rightly point out, systematicity is sometimes conceived as a property of thoughts, sometimes as a property of natural language, and sometimes as a property of linguistic competence. Furthermore, I wholeheartedly agree with Stokhof's and Groenendijk's (2005) request of justification before we decide to run together these three properties, since this identification seems to conflate *prima facie* different phenomena. Moreover, that these properties can be run together (or not) would be a substantial empirical finding, and hence this identification cannot be relegated to a mere ideological fiat. Following Stokhof & Groenendijk, I do not agree with such an identification, and will try to address systematicity as a claim about grammar and about linguistic understanding separately, although in a parallel way.

It is not altogether clear what the above-mentioned definition of systematicity may amount to as a phenomenon of linguistic competence (natural language[9]). Mainly because the examples used in this definition are quite trivial and circumscribed (see below and fn. 10). As Scholz and Pullum (2007) rightly point out, most of the examples available in the literature are straightforward variations of Fodor's and Pylyshyn's example.[10] Hence, it is not altogether clear how systematicity can be an argument for the compositional structure of linguistic competence. However, I will take it that these arguments are a sort of sufficient reason, or best explanation, to account for certain 'facts' of linguistic competence (natural language). The general schema of the argument from systematicity is as follows:[11]

[9]In this and the forthcoming paragraphs, I will discuss outside brackets the claim of systematicity as addressed to properties of linguistic competence, and will put between brackets the respective claim as addressed to properties of natural language, that is to say, grammaticality.

[10]Scholz and Pullum (2007, p. 376) claim that "[i]t must come as a bit of a shock to a reader approaching the literature for the first time to discover that (as a number of authors have remarked; see inter alia Niklasson & van Gelder 1994, Cummins 1996, Hadley 1997, and Johnson 2004) the large body of work on systematicity generally operates without benefit of any clear characterization of the crucial notion [...]. But what is that property or phenomenon? Hardly anybody says. Instead they mostly rehearse very briefly a couple of utterly trivial examples of the supposed consequences of the systematicity of the language capacity (often the ones given by Fodor and Pylyshyn), and move on quickly."

[11]Compare Fodor's and Pylyshyn's claim that "[i]f you assume that sentences are constructed out of words and phrases, and that many different sequences of words can be phrases of the same type, the very fact that one formula is a sentence of the language will often imply that other formulas must be too: in effect, systematicity follows from the postulation of constituent structure. Suppose, for example, that it's a fact about English that formulas with the constituent analysis 'NP Vt NP' are well formed; and suppose that 'John' and 'the girl' are NPs and 'loves' is a Vt. It follows from these assumptions that 'John loves the girl,' 'John loves John,' 'the girl loves the girl,' and 'the girl loves John' must all be sentences. It follows too that anybody who has mastered the grammar of English must have linguistic capacities that are systematic in respect of these sentences; he *can't but* assume that all of them are sentences if he assumes that any of them are" (Fodor and Phylyshyn, 1988, p. 38). Compare also Borg's claim that "our linguistic understanding is systematic: the grasp of the meaning of a whole sentence seems to be systematically related to the grasp of the meaning of its parts. Thus, among agents with a

Premise 1: Meaningful (grammatical) sentences are generated by semantic (syntactic) rules, and linguistic competence comes down to knowledge of a finite presentation of these rules—this is the compositional structure of linguistic competence.

Corollary of premise 1: If a competent speaker understands[12] sentence S (respectively, if S is grammatical), he or she understands any sentence $S[e_1/e_2]$ (respectively, any $S[e_1/e_2]$ is grammatical), for every e_2 of the same semantic (syntactic) category as e_1.

($S[e_1/e_2]$ does not strictly speaking refer to a single sentence. It stands for a sentence that is the same as S but where one or more instances of e_1 are replaced by e_2.)

Premise 2: "John" is an expression of the same semantic (syntactic) category as "the girl" and the competent speaker understands "John loves the girl" ("John loves the girl" is a grammatical sentence).

Conclusion: The competent speaker understands "John loves John," "the girl loves John," "the girl loves the girl" ("John loves John," "the girl loves John," "the girl loves the girl" are grammatical sentences).

The idea behind the general schema of the argument from systematicity, which seems to represent a sort of Deductive-Nomological Model of explanation, is that systematicity can be seen as a consequence of, and thus being explained by, the 'compositional structure of linguistic competence'. In other words, the idea is that representing language as a set of sentences generated from a set of rules and representing linguistic competence as knowledge of this set of rules explains, *qua* sufficient reason, the phenomenon of systematicity.

The first thing we should note in order to assess the general schema of the argument from systematicity is that the conclusion must be an empirical phenomenon, an observable set of data that has to be explained by the theory of linguistic competence (or by the syntactic theory). It is in this sense that the idea of "explanation" is exploited by the argument, that is, by making an analogy with the way in which in physics observations and predictions are deduced from

normal linguistic competence, if someone understands the sentence 'Bill loves Jill' they will also understand the sentence 'Jill loves Bill'. Yet again no theory which simply pairs sentences with their meanings will be able to predict or explain this systematicity of linguistic understanding. These properties of systematicity and productivity seem to point to a key fact about linguistic meaning, namely that it is compositional. That is to say, the meanings of complex linguistic items, like sentences, are a function of the meanings of their parts together with the mode of composition of those parts. It is this property which explains the fact that our understanding of meaning is productive and systematic" (Borg, 2004, p. 21).

[12]Understanding a sentence is reduced here to knowledge of the semantic rules that determine how the meaning of the sentence is composed from the meaning of its constituents. It does not include knowledge of the lexical meaning of the words of which the sentence is composed.

a theory. But we might well ask to what extent the 'rule-like' behavior of linguistic competence (grammaticality), where rules are, as it were, 'blind' to lexical meanings, can be observed.

I shall show that, given some fairly natural choices of semantic (syntactic) categories, language is rife with examples of the unsystematic kind. Hence, the myriad cases of unsystematicity represent a *reductio* of the general schema of the argument from systematicity, which implies that the conjunction of the premises must be false for this parcel of language. Thus, either we should abandon the assumption of a 'compositional structure of linguistic competence', or we should claim that the expressions that are exchanged for one another in these examples do not belong to the same semantic (syntactic) category, which entails that the theory from which we obtained these categories must be modified. But the argument can be repreated this time over the modified theory, leading to a predicament. But before we are in a position to present the predicament we have to discuss some examples of unsystematicity.

There are situations that are unsystematic from the point of view of linguistic understanding. For instance, if we consider that "John" and "KFC" are of the same kind, that is, proper names, it follows that although one can understand "John loves KFC," the same is not true of "KFC loves John." To preserve systematicity we need to stipulate that "John" and "KFC" belong to different semantic kinds.

Moreover, lexical meanings get in the way of systematicity. Consider the following examples: although someone can understand "John sees the eyeless shrimp," the same is not true of "the eyeless shrimp sees John." Likewise for "Mary loves the feeling-less psychopath" and "the feeling-less psychopath loves Mary." To preserve systematicity, we need to stipulate that "John" and "the eyeless shrimp" belong to different semantic kinds. The same goes for "Mary" and "the feeling-less psychopath."

What is more, consider the following examples: "John sees Stevie Wonder," "Jane listens to Hellen Keller," "Mary loves Albert Hamilton Fish." The corresponding inverted sentences (i.e., the subject in place of the object and viceversa) are 'senseless', or at least very problematic to understand, since Stevie Wonder is blind, Hellen Keller was deaf-blind, and Albert Hamilton Fish inspired the character of Hannibal Lecter (a scarying Hollywood psychopath). In other words, there is a clear asymmetric understanding of these sentences.[13] To preserve systematicity, we need to stipulate that "John," "Jane," "Mary," on the one hand, and "Stevie Wonder," "Hellen Keller," "Albert Hamilton Fish," on the other hand, belong to

[13]Note that it is not allowed to claim that whatever problem there is in understanding these sentences, it arises at the level of interpreting the full meaning of the sentence, not its structural one. For this move already presupposes what it is intended to show, namely, that 'understanding' must be equated with 'knowledge of semantic rules plus knowledge of literal meanings'. That is, this move is question begging. The term understanding that appears throughout this paragraph has to be pre-theoretical, since we are discussing the empirical data that the account is supposed to explain.

different semantic categories. But since similar problems of systematicity follow from "Albert Hamilton Fish sees Stevie Wonder," further sub-categorization is required. There always seems possible, with a little imagination, to find a couple of sentences that will oblige this sort of subdivision in order to preserve systematicity.

What the champion of subcategorization would need to show is that this method will eventually stop in some atomic sub-sub-...-categories. But where does that stop? Do we stop at a place where stipulation of rules is still plausible? Such problems are substantial. On the one hand, it is quite inappropriate to stop at a point where there is a rule for each lexical (unambiguous) item. For in such a point there will be nothing left of a usable notion of a semantic rule. The postulated atomic sub-sub-...-categories must contain many lexical (unambiguous) items to avoid the triviality of a rule-based account that utilizes rules that have no generality. Besides the triviality of the account, would it provide any interesting information? Would it even be feasible to produce such an account? Moreover, the claim suggested by the previous discussion is that should these atomic sub-sub-...-categories exist, it would be quite an achievement to demonstrate their existence; but such an existence, however, must not be posited by fiat. And it should not be posited by fiat, since it is a purported fact of linguistic competence (natural language) that is supposed to be explained by the formal semanticist's thesis. To stipulate these atomic sub-categories would destroy all of the bite of the purported explanation provided by this thesis. Another problem is that, according to the formal semanticist, structural meaning is independent from lexical meaning. But if we are to preserve systematicity, structural meaning turns out to depend on lexical meaning, as the above-mentioned examples show. Thus, the formal semanticist is put under considerable pressure to defend the idea that her domain of inquiry is the set of structural meanings and that this set is independent from lexical meanings. For without being able to defend such an independence, she will not be able to avoid the problems raised by the argument from incomplete understanding, as explained above in §2.2.1.

Let us now move to systematicity as a property of natural language. We can follow in Scholz's and Pullum's (2007) footsteps and claim that one can represent the property of systematicity by the following statement:

> A language L is systematic if and only if (S) holds for all A:
>
> (S) A is a constituent of L only if for all B of the same linguistic kind as A, and for all things C, C can compose with A (in a certain way) to form a sentence if and only if C can compose with B (in that same way) to form a sentence.
>
> What makes a language systematic, in other words, is that the only constituents permitted in it are those whose category-mates (constituents âĂIJof the same linguistic kindâĂİ) all compose in the same way with exactly the same other linguistic material (Scholz and Pullum, 2007, p. 387).

Examples of unsystematicity occur unless one requires that intersubstitution be restricted to fine-grained categories, which, in the case of good-old-fashion adjectives, seems to require a big amount of subcategories:

> Most of the distinctions drawn to make all these subcategories turn out to cross-classify, so that categories have to be intersected repeatedly, making them more and more specific. Take English adjectives, for example:
>
> - some take complements (as in happy with that) and some don't;
> - of those that do, some take PPs (fond of it), some take non-finite clauses (bound to be of use), some take finite clauses (aware it happened), some take more than one of these (glad of it, glad to be of use, glad it happened), and so on;
> - some have obligatory complements but most have optional complements;
> - some are optionally usable in attributive modifier function (before a noun), some can only be used attributively, and some can never be used attributively;
> - some are optionally usable in postpositive complement function (after the head noun in an NP, as in anyone intelligent), some can only be used postpositively (trouble aplenty), and some can never be used postpositively;
> - some are optionally usable in predicative complement function (in a VP, as in feel sad), some can only be used predicatively, and some can never be used predicatively.
>
> (Scholz and Pullum, 2007, p. 392)

The situation is summed up by the following claim, which Scholz and Pullum (2007, p. 390) attribute to Johnson (2004): "[O]n the one hand, if anything like a standard system of syntactic categories for English is assumed, English is clearly not systematic in the sense of [(S)]; and on the other hand, if (S) [...] is stipulated to hold, then English will have an arbitrary and extremely fine-grained set of categories that no syntactician could be a realist about." As we argued above, this situation is not restricted to systematicity as a property of natural language, but it extends to systematicity as a property of language-users as well.

A champion of the 'compositional structure' can opt for the latter option, that is, he or she can stipulate semantic (syntactic) categories in such a way as to preserve systematicity. But such a move comes at a price. For systematicity turns out to be stipulated by fiat, and no longer can it be claimed to be motivated from empirical data. In other words, the argument from systematicity, which is supposed to show that we must endorse a 'compositional structure of linguistic competence', is not the best explanation of empirical data. For the compositional structure of linguistic competence turns out to be stipulated in advance. In more

colloquial terms, the argument from systematicity can only convince believers of the 'compositional structure', and cannot convince non-believers. It is an argument with no force at all.

To bring the discussion of this 'intuition' to a close, we can see that we have reached the intended conclusion of the argument: whatever linguistic facts there are behind the 'intuition' of systematicity, they do not force on us the conception that language is a set of sentences generated from a set of rules and that linguistic competence is knowledge of these rules. Systematicity is more of a methodological choice than a best explanation of facts of linguistic competence (natural language). Moreover, if we bring to bear the criteria of adequacy, the stipulation of systematicity is incompatible with our descriptions of our uses of language in everyday practices, where words are categorized into semantic (syntactic) categories that do not preserve systematicity. "John" and "KFC" are proper names in the light of our everyday uses of language, but systematicity forces us to posit a theoretical distinction between them; such a distinction does not respect our descriptions of language-use in everyday practices, and hence it does not meet the second criterion of adequacy. Finally, since more and more theoretical distinctions must be posited to preserve systematicity as our analysis goes more fine-grained, such a methodological principle is not parsimonious at all, and thus the theorist is better off without it.

The infinity claim

The next intuition is that of the infinity of language, conceived as an argument in favor of the compositional structure of linguistic competence. I will call this argument *the argument from infinity*, and I take it that it has the following form (compare fn. 14):

Premise 1: There are infinitely many grammatical sentences.

Premise 2: Human understanding is finite.

Premise 3: A competent speaker has tacit knowledge of the entire language.

Conclusion: Language, seen as a set of grammatical sentences, must be generated by a finitely representable set of rules, where some of them are recursive, and linguistic competence must consist in tacit knowledge of a finite presentation of this set of rules.

We should not take for granted premise 1 in the previous argument, notwithstanding the fact that it has been widely agreed upon by linguists and analytic philosophers of language alike.[14] For the question remains, how is it possible to prove that there are infinitely many grammatical expressions?

[14]See, for example: "This property of discrete infinity characterizes *every* human language; none consists of a finite set of sentences. The unchanged central goal of linguistic theory over the

Pullum's and Scholz's "Recursion and the infinitude claim" (2010) summarize the myriad claims for infinity in what they call the "standard argument" of the infinity of language (pp. 115f). The argument consists of three steps:

(I) Syntactic facts: "*I exist* is a declarative clause, and so is *I know that I exist*, and so is *I know that I know that I exist*; *came in and went out* is a verb phrase coordination, and so is *came in, turned round, and went out*, and so is *came in, saw us, turned round, and went out*; *very nice* is an adjective phrase, and so is *very very nice*, and so is *very very very nice*; and so on for many other examples and types of example" (p. 115).

(II) No English expression has maximal length.

(III) The collection of grammatical sentences is an infinite set.

Pullum and Scholz argue, in my view correctly, that the step from (II) to (III) is trivial. Indeed, if English, conceived as a set of sentences, were finite, it would have an expression of maximal length. They also argue that the step from (I) to (II) is unwarranted (see below). That is, Pullum and Scholz disagree with the claim that language is an infinite collection of grammatical sentences, since they think this claim is an unwarranted conclusion that cannot be obtained from the syntactic data in (I).

I agree with Pullum's and Scholz's conclusion. However, it is important to realize that linguists and philosophers have argued for the infinity of language in terms of richer conceptions of the syntactic facts described in (I), for instance, in terms of the intuition of productivity, to which we will come back in a moment. But in the "standard argument" the syntactic facts are characterized as a corpus of linguistic data, that is, as lists of sentences recorded during a conversation or sentences that appear in a text.[15] For the time being, let us suppose that the

last fifty years has been and remains to give a precise, formal characterization of this property and then to explain how humans develop (or grow) and use discretely infinite linguistic systems" (Epstein and Hornstein *Letter on 'The future of language'.* (2004, emphasis in the original), quoted from (Pullum and Scholz, 2010, p. 113)). "Recursion pops up all over language: many have argued that the property of recursive infinity is perhaps the defining feature of our gift for language" (Yang *The Infinite Gift* (2006), quoted from (Pullum and Scholz, 2010, p. 114)). "The fact that anyone who has a mastery of any given language is able to understand an infinity of sentences of that language, an infinity which is, of course, principally composed of sentences which he has never heard before [...] can hardly be explained otherwise than by supposing that each speaker has an implicit grasp of a number of general principles governing the use in sentences of words of the language" (Dummett, 1978, p. 451). "When we can regard the meaning of each sentence as a function of a finite number of features of the sentence, we have an insight not only into what there is to be learned; we also understand how an infinite aptitude can be encompassed by finite accomplishments" (Davidson (1965), quoted from (Davidson, 1984b, p. 8)).

[15]Such lists, as taken from empirical corpus of both written and spoken language, are rather short in examples where iteration or recursion goes deeper than 2 embeddings. For instance,

syntactic facts are only those in (I). How can we prove that there is no grammatical expression of maximal length?

Pullum and Scholtz claim, in my view correctly, that (II) is usually only asserted, but never adequately justified (2010, pp. 116ff). (II) cannot be obtained by inductive generalization from the observations in (I). For an inductive generalization states that all members of some collection make true certain statement, on the basis of the observation that all members of some subset of the collection make true the statement. But this inference does not, and cannot, state something about the *size* of the collection (2010, p. 118). Moreover, (II) cannot be obtained by mathematical induction without begging the question. In order for mathematical induction on the length of sentences to prove that there is no expression of maximal length—e.g., by proving that the property "Sentence S has no maximal length" for all sentences S—, it has to be assumed that mathematical induction works on the sentences of language. But this assumes that it is true that for every expression of length n there is an expression of length m ($m > n$), that is to say, this assumes (II) (2010, p. 119). In short, an argument to prove (II) in terms of mathematical induction is question-begging.

Someone could still argue that, even if inductive generalizations and mathematical induction do not prove the infinity of language, the facts in (I) can only be explained by appealing to recursive rules, and recursive rules can generate an infinite amount of sentences (see, e.g., fn. 14). However, Pullum and Scholz argue that facts in (I) can be accounted for without using generative grammars (i.e., without appealing to recursive rules that generate infinitely many sentences). The syntactic theory that they propose (as we shall see shortly) is such that it is "compatible with any answer to the question of [...] how many sentences there are" (Pullum and Scholz, 2010, p. 123). Hence, we are not forced to conceive of language as a set of sentences generated by a set of rules, and *a fortiori*, we are not forced to claim that language is infinite.

Karlsson's (2010) empirical analysis of recursion in European languages shows that "[n]o evidence for nested syntactic recursion of degrees greater than 3 is at hand, neither on clause level nor on phrase level" and that "[t]he extant examples of nesting of degree 3 and even those of degree 2 are so few, convoluted, and almost exclusively confined to written language as to practically falsify the hypothesis of the importance of unlimited syntactic nesting (multiple center-embedding)" (p. 63). Indeed, the claim that language is unbounded and creative can hardly be explained by iteration or recursion given its actual constrained use. Interestingly, iteration or recursion seem to be phenomena more akin to written language; see Karlsson's (2010, p. 64) claim that "Karlsson (2009) demonstrates in philological detail that multiple nesting arose along with the advent of written language"; see also Verhagen's (2010, p. 108) claim that "the development of literacy in an individual's life may play an important role in the general complementation pattern becoming a productive rule, since it is especially through the interaction with texts that the type frequency of this pattern increases dramatically in a person's linguistic experience. Following this line of thought, the hypothesis suggests itself that it may very well also have been the development of writing systems, and their spreading through human populations, that created the basis for the evolution, i.e., the *cultural* evolution, of general recursion in this area of the grammars of the languages involved" (emphasis in the original).

To give an example, if grammaticality is explained in terms of constraints, instead of generative rules, as it is done in Model-Theoretic Syntax (see, e.g., Pullum, 2007), we have a syntactic theory that does not make any ontological commitments as to what language actually is, nor about the amount of expressions that can be deemed grammatical:

> Grammars of this sort are entirely independent of the numerosity of expressions (though conditions on the class of intended models can be stipulated at a meta-level). For example, suppose the grammar of English includes statements requiring (i) that adverb modifiers in adjective phrases precede the head adjective; (ii) that an internal complement of know must be a finite clause or NP or PP headed by of or about; (iii) that all content-clause complements follow the lexical heads of their immediately containing phrases; and (iv) that the subject of a clause precedes the predicate. Such conditions can adequately represent facts like those in (I). But they are compatible with any answer to the question of how many repetitions of a modifier an adjective can have, or how deep embedding of content clauses can go, or how many sentences there are. The constraints are satisfied by expressions with the relevant structure whether there are infinitely many of them, or a huge finite number, or only a few" (Pullum and Scholz, 2010, p. 123).

There does not seem to be any other way to prove (II) on the basis of (I), thus premise 1 is not warranted. *A fortiori*, the conclusion that linguistic competence must be conceived in terms of knowledge of a finitely representable set of rules that generates all grammatical sentences cannot be argued for on the basis of the infinity claim.

As claimed above, there are richer ways to interpret the syntactic facts (I), which have been used to argue for the claim that language is an infinite set of sentences. One of these claims is the intuition of productivity, to which we now turn.

Productivity

The third intuition has been called 'productivity'. There are several claims of productivity. But before we turn to a discussion of some of them, it is worth noting that some times they are seen indistinctly as claims of linguistic competence and as claims of natural language. As claimed above, we should approach this conflation with caution, for properties of linguistic competence seem to be, at least *prima facie*, different from properties of natural language. The very formulation of some claims of productivity presupposes such a conflation, but the reader must bear in mind that they have to be treated as claims dealing with either properties of linguistic competence or properties of natural language. However, I will not do here the extra work of pointing out such a distinction in every case.

One claim of productivity consists in that there are words or expressions that can be iterated within some sentences over and over again, in such a way that if someone understands the initial sentence, she will also understand the more complicated one. This claim has been used to argue for the infinity of language. Another claim of productivity, also known as 'creativity', consists in that we are able to understand sentences that we have not heard before.

The first claim of productivity is that "elements within a sentence can be iterated time and time again, to produce more and more complex sentences, but the agent who is capable of understanding or producing the initial sentence will also be in a position to understand or produce the more complicated linguistic item" (Borg, 2004, p. 12).

Linguists and semanticists have taken the previous claim as a description of a fact about linguistic competence (and not as a particular way to provide some structure to sheer syntactic facts). Hence, they have seen it as a description of facts about linguistic competence that is richer than the syntactic facts in (I). Indeed, the infinity of language follows from this richer description.[16]

If the claim of productivity as described above is a fact about linguistic competence, it can also be used to argue for the compositional structure of linguistic competence in the following way. The compositional structure can be seen as an explanation of such fact in the following way:

Premise 1: Sentences are generated by means of rules, some of which are recursive.

Premise 2: Linguistic competence is (tacit) knowledge of (a finite presentation of) a set of rules.

Conclusion: "... the agent who is capable of understanding or producing the initial sentence will also be in a position to understand or produce the more complicated linguistic item."

Note in passing that premise 1 is unwarranted, as discussed above with reference to the argument from infinity. For there are syntactic descriptions of sentences that do not entail that sentences are generated by means of rules (where some of them are recursive). This premise can only follow from a preconception about the nature of linguistic competence.

However, my main target will be the claim that productivity is a description of a fact about linguistic competence. If I manage to make a cogent criticism against this claim, not only will I have argued against the use of productivity

[16]For claim (II) above, namely, that no English expression has maximal length, is a consequence of productivity. Suppose by contradiction that there is an English sentence of maximal length. Take also the example of what has been traditionally conceived as a productive element: "I know that". If S were a sentence of maximal length, the sentence "I know that S" would be a sentence with length greater than the length of S. This is a contradiction.

as an argument for the compositional structure of understanding, but also as an argument for the infinity of language.

Let us start out by paying attention to a necessary qualification that usually accompanies the 'observation' of productivity: "The claim has to be that the agent will be *in a position* to produce or comprehend the iterated sentence, since, at some point of iteration, the agent may no longer actually be able to comprehend/produce the sentence. For instance, given too great a number of iterations the agent may run out of time or memory for processing the sentence; however, the claim is that this limitation emerges from features external to the agent's linguistic competence itself" (Borg, 2004, fn. 7, p. 12). That these 'limitation factors' are "external to the agent's linguistic competence itself" can only follow from a prior conception of what linguistic competence itself is, namely, that it is tacit knowledge of a set of rules. The actual facts suggest that given too many iterations we are not able to comprehend the iterated sentence. We reach a predicament: either a fact about linguistic competence is what we can observe and describe (namely, that linguistic competence is limited), or a fact about linguistic competence is something that we *cannot observe*, but that we can infer only on the basis of an ideological fiat (namely, that linguistic competence is free from limitation factors). But then again, why is the latter a fact about linguistic competence?

We must bring to bear here our criteria of adequacy. Our descriptions of our experiences of language-use point in quite the opposite direction from the ideological fiat. For they show that our linguistic experiences depend on the complexity of the expressions used. The easiest case to consider is tied to the length of the sentence. The longer the sentence, the lesser we experience that we can use it. (The ensuing discussion should not be taken to imply that the only 'limitation factor' as regards linguistic competence is the length of the expression; there are other 'limitation factors' at play, but I shall only discuss one of them here.[17])

In order to appreciate this point better, let us make an analogy with natural numbers. Our familiarity with natural numbers is directly proportional to the size of the number. We can have a good command of small natural numbers, but this command fades out proportionally to the size of the number.[18] This claim can be made more precise by saying that, given a particular numerical notation, the larger the number, the lesser the command we can have of it. To give an example, assume that we are to use numerals to deal with natural numbers, that is, $|, ||, |||, ||||$ etc. It is clear that it becomes rather cumbersome to deal with numbers that are larger than five.

[17]Besides the length of the expression, the kind of 'representation' utilized is another limitation factor (see fn. 20).

[18]Moreover, our experience of inexhaustibleness or unboundedness of natural numbers is tied, although not restricted, to this fading out of our command of natural numbers.

It is worth noting that the claim is not that we cannot have command of considerably large numbers, for we have created appropriate notations to deal with them. The claim is rather that, if we fix beforehand a particular notation, our command of numbers fades out as the numbers get bigger. For instance, instead of using numerals to deal with numbers larger than five, we can use decimal notation to easily handle numbers far larger than those. We can more or less comfortably handle numbers up to several millions in decimal notation (note that these numbers contain around seven or eight digits). But we will feel quite uncomfortable to deal with, say, numbers with a hundred digits in decimal notation. We can switch notations to overcome this limitation, say, by moving on to scientific notation (e.g., 3.4E+100). Yet, this notation becomes cumbersome at some point, when numbers are really large (think of a "googolplex"[19]). This process of 're-representation' of numbers, by switching notations, clearly shows that our command of numbers fades out proportionally to the size of the number, but that we have learned to deal with it.[20]

The same goes for the case of natural language. Witness to this are the myriad resources for 're-representation' that we find in natural language. Technical vocabulary is a case at hand. For instance, a "leap year" is a short for an explanation that every four years our current western calendar loses one day's time with respect to the Earth's orbit around the sun, which must be made up for by including one day more in February every fourth year. Clearly, only rarely do we use the explanation. Normally, we use the technical term "leap year." Acronyms are also cases of 're-representation', or ways to overcome the problem of handling long expressions. Pronouns and anaphora can be seen as yet another example of this strategy. Furthermore, quantifiers (in the case of finite domains), if conceived as abbreviations of very long disjunctions or conjunctions, can also be seen as tools to overcome the problem of handling long expressions.

Now, there is a way in which the claim of productivity can describe a fact of our language-use. However, it would be in such a way that neither the argument of the infinity of language or the argument for the compositional structure can make use of. It *is* possible to claim that, for a particular and restricted fragment of natural

[19] A googolplex is the number $10^{10^{100}}$.

[20] The only way out of this conclusion is to take platonism in mathematics seriously, and to claim that our access to numbers is independent from our means of representation, and that this access is equal for each number. The problem with this move is that it becomes an ungrounded ideology, that is, one that we have no rigorous way to substantiate.

The issue that our ability to deal with numbers is closely tied to the particular representation that has been chosen is also clear when we consider the task of performing arithmetical operations. Marr makes a clear statement at this regard: "[H]ow information is represented can greatly affect how easy it is to do different things with it. This is evident even from our numbers example: It is easy to add, to subtract, and even to multiply if the Arabic or binary representations are used, but it is not at all easy to do these things—especially multiplication—with Roman numerals. This is a key reason why the Roman culture failed to develop mathematics in the way the earlier Arabic cultures had" (Marr, 1982, p. 21).

language in a particular situation, we can *prescribe*, in a similar way as it is done in the case of formal languages, that an unbounded supply of grammatical sentences can be obtained. For example, when a logician that studies, say Epistemic Logic, stipulates that the operator $\Box$ represents the natural language expression "A believes that," and that this operator is recursive, he is also *stipulating* that, given any expression S, the expressions "A believes that S," "A believes that A believes that S," "A believes that A believes that A believes that A believes that S," and so on *ad infinitum*,[21] are natural language expressions (note that these natural language expressions are useful for the logician). However, any stipulation that a particular expression can be repeated *ad infinitum* within a bigger expression is done in a conscious and explicit fashion, which are properties that do not adorn the purported generative rules that are tacitly known by competent speakers. Note in passing that this entails the negation of premise 3 in the argument from infinity.

Most people on the street do not go about doing their day-to-day activities by stipulating a rule to generate an infinite amount of sentences, nor do they learn it from their parents; thereby, such a stipulation does not make part of everyday life. In fact, the only place where such a stipulation occurs is in logic courses, or courses in formal semantics, where iteration of operators such as "It is possible that", "It is necessary that", or "A believes that" plays a role. Furthermore, the fact that people can understand those rules when they are explained to them does not entail that linguistic competence has to be conceived in terms of rules. For there are other ways to represent recursive capacities other than by means of rules. And any such explanation has to take into account the conscious and explicit way in which these stipulations are produced, which is quite problematic for a conception of linguistic understanding such as the one of the formal semanticist.

Thus, rather than a fact about linguistic competence, the first claim of productivity is an ideological claim as to what linguistic competence itself is. In pain of begging the question, this claim cannot be used to argue for the compositional structure of linguistic competence.

Consider now the second claim of productivity, namely, that:

> [w]e have no trouble whatsoever in grasping the meaning of sentences even if we have never encountered them before. Consider

[21] Following in Wittgenstein's footsteps (see Wittgenstein 1954, §208), it is possible to distinguish between an "and so on" proviso from an "and so on *ad infinitum*" proviso, where the former is an abbreviation of a long procedure that is eventually completed, and where the latter is no abbreviation. For instance, the "and so on" can follow an explanation as to how to complete some of the cells in a Sudoku puzzle. The explanation only concerns a limited number of events where the numbers in some cells are filled out, and the "and so on" is meant to abbreviate an explanation as to how to proceed with the remaining cells. On the other hand, the "and so on *ad infinitum*" can follow an explanation as to how to construct the numerals, starting from the numeral for the number one, |, followed by the numeral for the number two, ||, the numeral for the number three, |||, and so on *ad infinitum*.

> (1) I saw a pink whale in the parking lot.
>
> Few if any of our readers will have heard or seen this particular sentence before. Yet you can quite easily understand it. How is this feat possible? The experience of understanding a newly encountered sentence like (1) seems much like the experience of adding two numbers we have never summed before, say
>
> (2) $1437.952 + 21.84$.
>
> We can do the sum in (2) and come up with 1459.792 because we know something about numbers and have an algorithm or rule for adding them together. [...] By the same token, we presumably understand a sentence like (1) because we know what the single words in it mean [...] and we have an algorithm of some kind for combining them" (Chierchia and McConnell-Ginet, 2000, pp. 6f).

Though compelling at first sight as it may be, this analogy between language and arithmetical calculations does not carry us too far. Not if it is supposed to be the best explanation of the fact that we understand sentences we have not heard before.

The argument of productivity has the following structure:

Premise 1: Sentences are generated by means of rules.

Premise 2: The set of sentences that can be generated from these rules properly contains the set of sentences that any agent might have heard before.

Premise 3: Linguistic competence is (tacit) knowledge of (a finite presentation of) a set of rules.

Conclusion: The agent can understand sentences she has not heard before.

The explanation is based on an analogy. But this analogy breaks down when we take into account sentences that we *have* heard before. For whereas the arithmetical calculation should always give us the same result in any occasion, a sentence can be understood in different ways in different occasions. For instance, $1437.952 + 21.84$ should always be understood as adding up to 1459.792, whereas "I have had breakfast" can be understood as meaning that I have had breakfast this morning, or that there was an occasion, previous to the time of utterance, when I ate breakfast, or it can be understood in other alternative ways. This is precisely the "contextualist challenge," which I discussed earlier (see §1.4.4).

Our experiences with sentences are not like our experiences with words. Whereas understanding a word seems to transcend the limits of a single occasion of use, understanding a sentence seems to be tied to the occasion of use in which it is

uttered. Thus, to posit a conception of linguistic competence according to which understanding a sentence is independent from any occasion of use is a move that is not motivated by our descriptions of experiences of language-use—it is rather motivated by an analogy with mathematical propositions.

Finally, it remains to say that we must seek for an account of our linguistic competence that explains that understanding a word transcends the limits of a single occasion of use, whereas understanding a sentence seems to be tied to the occasion of use in which it is uttered. If such an account is found, the observation that we understand sentences that we have not heard before does not add anything to the puzzle: how we understand sentences we have never heard before must be accounted in the same way as how we understand any other sentence. In other words, if we can account *how* we understand sentences, independently of whether the sentence is old or new, we can also account for the fact *that* we understand sentences we have not heard before.

We can underscore the radical change of perspective regarding linguistic competence that is hinted at here. Instead of an abstract relation between an agent and a pseudo-platonic entity called a rule of language, which is independent from our daily activities, what emerges is a perspective that must take into account that agents are embedded in situations where the use of language makes sense, where this sense is not independent from the extra-linguistic activities at work in the situation. If this is indeed the case, it also follows that the account of language cannot be provided in terms of abstract rules, propositions, and 'limitation-free' abilities.

***

To take stock, the underlying scheme in all three cases is as follows. To begin with, the formal semanticist takes for granted certain 'facts' about language and linguistic competence. He or she usually also presupposes that properties of language mirror properties of linguistic competence, and hence that 'facts' about linguistic competence are also 'facts' about language, and viceversa. Next, he or she claims that the compositional structure of linguistic competence—i.e., that language is a set of sentences generated by a set of rules and that linguistic competence is knowledge of these rules—is the best explanation of these 'facts'. The gist of the foregoing criticisms of the three arguments based on these 'facts' is to show the theoretically-laden nature of such 'facts'. Neither systematicity, nor the infinity of language, nor productivity are 'facts' about language or linguistic competence. They are theoretically-laden interpretations of observations about our use of language. The bias of these interpretations is precisely what they intend to show, namely, that language is a set of sentences generated from rules and that linguistic competence is knowledge of these rules. Hence, the arguments based on these 'facts' are at best question begging, at worst they are not arguments at all (for they are not explanations of observational facts). Behind these

criticisms, there are our criteria of adequacy. What takes priority when it comes to calling something a fact about language or about linguistic competence are our descriptions of our experiences of language-use in everyday practices. Taking these descriptions at face value gives rise to quite a radical, alternative perspective on what linguistic competence itself is.

The main lines thereof are the following. Linguistic competence is unsystematic—e.g., substitution of object and subject is often blocked by the way the referents of these expressions are understood. To posit semantic categories seems a misguided enterprise, as the level of generality required by a workable notion of rule will always produce a significant departure from our descriptions of our experiences of language-use. We need models of linguistic competence that preserve such unsystematicity. Moreover, our descriptions of language-use show that our abilities to understand and produce signs are not independent from the characteristics of these signs, and that abstracting away from 'limitation factors' always produces a significant departure from our descriptions of our experiences of language-use. To understand an expression is not to enter in an ideal epistemic relation with an entity that is intrinsically independent from the means used to express it. Hence, the required model of linguistic competence seems to be more of an embodied ability rather than an abstract, 'implementation-free' kind of software. Finally, there is no independent interest in the meaning of mere combinations of words, since our descriptions of experiences of language-use are always tied to particular situations—while, at the same time, the meaning of these words transcends the situation of use. If there is an interest in what a combination of words means, it is relative to a particular situation of use thereof. It seems to me that, in as far we do not want to depart from our descriptions of our experiences of language-use in everyday life, we should consider uses of combinations of words as being embedded in (extra) linguistic activities of embodied agents.

But let us not get ahead of ourselves. Before we delve into more fine-grained characteristics of an alternative model of linguistic competence, we must first dig a little deeper into the inadequacies of the formal semanticist's thesis; so let us now turn to the argument form incomplete understanding.

2.2.3 Criticism of the formal semanticist's notion of a competent speaker and her epistemic task

Incomplete understanding

As far as our descriptions of our uses of language in everyday life are concerned, that is, if we are asked and reflect about it, we often refrain from attributing to someone, or even to ourselves, *complete* understanding of some concepts that appear in a body of knowledge that we can, nevertheless, attribute to her or to ourselves. For instance, we know that when Beethoven composed his 9th

Symphony he was already deaf, but most of us cannot tell apart a symphony from a concert or a sonata—either by not recognizing the differences when listening to them, or by not knowing the technical differences. Another example could be that John knows that one of his friend's father is the owner of a factory, and that they are trying to improve their process of steel galvanization, but if you ask John, there is no much that he knows about the process of steel galvanization—so that John cannot be said to understand the concept expressed by "galvanization."

What is more, the procedure to measure how far away a star is from Earth is not widely known, so not too many people understand the concept "measuring how far away a star is." Nevertheless, most of us can understand the claim that the closest star to Earth, different from the Sun, is Alpha Centauri, which has been measured to be located about 4.37 light years away. Our meager understanding of the procedure to measure the distance from a star to Earth contrasts with the familiarity with which we measure the dimensions of a table with a meter tape. Not only do we understand the connection between product (measure) and procedure (measurement), but we can recognize when someone is measuring tables (or chairs, or rooms, etc.); we are fairly competent in carrying out measures with straight rulers, meter tapes, etc; we can teach how to measure with these instruments; we know the various purposes of measuring; etc.

Note that in some of the previous cases, the concept about which we attribute incomplete understanding refers to a process, not to an object that is its product. In particular, we are not talking about "galvanized steel" or "distance between a star and Earth," but about the way in which we can produce these objects.[22] Thus, the general observation arises that we can understand the product without understanding the procedure that produces it. Hence, we can understand the concept related to the product without (fully) understanding the concept related to the procedure. Another general observation is that people can easily recognize whether sentences that contain words that they incompletely understand are or not well-formed. Moreover, some people know that these sentences are true—e.g., that "Beethoven composed his 9th Symphony when he was already deaf" is true—, even though they lack complete understanding of the meaning of some of the words in these sentences.

An important qualification is in order. Consider first another example of a concept that people have incomplete understanding about, namely, the "6 yard box" in a football pitch. It is very easy for many people to recognize its reference—i.e., the small rectangular area inside a bigger rectangular area at each side of the pitch—, but its intension depends on its purpose, which not everyone knows—i.e., the goalkeeper cannot be touched by any player of the other team inside this area. We can contrast this example with the concept of a pacemaker. Most people know

[22]In the broad sense of the word "object," since the ontological status of galvanized steel is somewhat different from that of the measure of a distance. Moreover, the question arises what the relationship is between these 'objects' and symbolic kinds. I will come back to this question in the "Final comments."

its intension, that is, they know its purpose—i.e., to control the heart's rhythm—, but may not recognize one when they are looking at it. Compare these examples with the concept of a pencil. You cannot count as understanding this concept if you do not know the purpose of a pencil, and you cannot count as having a complete knowledge of English if you cannot recognize a pencil and call it by "pencil." Not only is it very odd to find out that someone does not understand the concept pencil in our present times, but it also seems strange to say that someone has an incomplete understanding of it. Thus, it seems that some concepts cannot be incompletely understood—and are most often understood rather than not understood—whereas others tolerate different degrees of understanding.

The case of expressions referring to practices

In the case where a referring expression "w" refers to a practice p, understanding this expression can be associated (informally and on the basis of our descriptions of our experiences of uses of language in everyday life) with a number of abilities:[23]

(a) To be able to recognize a 'fair amount' of actions as being instances of the practice p by attributing "w-ings" to the actor.[24] That is, if the speaker recognizes that someone is carrying out practice p, she can assert, perhaps accompanied by an ostensive gesture, "she is w*ing*!" (by analogy with the case when someone calls a rock "rock!"). For instance, when Mary asks Paul "Where is John?" and Paul says "He is presenting an exam."

(b) To be able to recognize a 'fair amount' of products of p. For instance, if p is the practice of giving money back from the register machine after someone's paying in cash, "w" can be used to refer to the amount given back after the practice, namely, the change.

(c) To be able to prompt instances of the practice p by using "w." For instance, if "w" is the expression "to multiply," a child could address it to an adult in order for her to multiply something for the child, say two four-digit numbers.

[23]This discussion of practices and understanding is based on Schatzki's *Social Practices* (1996). Schatzki makes an important clarification as to what a practice is *not*. The important concept for him, as well as for our present purposes, is not that of a practice as doing something repeatedly (e.g., when one practices the piano), nor is it the one of practice as opposed to theory. The notion of a practice that Schatzki, and us, are interested in is a "temporally unfolding and spatially dispersed nexus of doings and sayings" (p. 89). For more details, see §3.1.1.

[24]To understand a word "w" that refers to a practice p, A (or B for that matter) does not need to know the idealized set of all performances (past, present, and future) that are instances of p. No one actually knows this set for any term, nor is it realistic to say that it is humanly possible to know it. However, to the extent that understanding a referring expression requires knowledge of its extension, the subject should recognize a fair amount of 'objects' that fall under the expression. 'Fair amount' should not entail that there is a minimum proportion of 'objects' that must be correctly classified; such an ability does not need to be quantified.

(d) To be able to respond to the word "w" in ways that are 'appropriate' to practice p. For instance, if p is the practice of preparing hot chocolate, someone, say the waiter at a coffee shop, can respond to the expression "hot chocolate, please" by preparing a hot chocolate for the customer.

(e) To understand the practice p.[25]

Incomplete understanding of an expression "w" that refers to a practice p can thus manifest itself in different ways. Let A be an agent:

1. For some practices, A can have the ability described in (b), and only very underdeveloped abilities as described in (a), (d) and (e). This claim is based on the general observation that it is possible to understand the product without understanding the procedure that brings about this product. For instance, one can understand a measure that tells how far away a star is from Earth without understanding how to measure this distance or being able to identify when someone is measuring this distance.
2. For some practices, A can have the ability described in (c), and only very underdeveloped abilities as described in (a), (d) and (e). For instance, one can use the expression "integration" (in the mathematical sense) inside a sentence, say, "Can you integrate this function for me?" without understanding the procedure that corresponds to the integration of real functions.

Observations based on incomplete understanding

Against the background of the foregoing discussion of incomplete understanding, we can make the following observations. To begin with, words or expressions for which attribution of incomplete understanding makes sense are such that no clear distinction can be made between a phase of acquisition and a phase of use. That is, for these words or expressions, understanding the concept that they express does not strictly precede the ability to use them (in certain situations to achieve certain purposes).[26] For instance, A could be a child and "w" could be the expression "to multiply," which can be addressed to an adult in order for him to multiply something for the child, say two four-digit numbers. The observation is that the child need not understand the concept of multiplication in order to correctly use the expression "to multiply" in certain situations. Or A could be the captain of an airplane and "w" could be the expression "to diagnose all communication systems (in the aircraft)," which can be addressed to the flight

[25]Note that understanding "w" is not the same as understanding the practice p that "w" refers to.

[26]The claim is not that this property applies only to words or expressions for which attributions of incomplete understanding makes sense. There are other words and expressions for which a clearcut distinction between a learning-phase and a using-phase is an unmotivated distinction. But this issue is clearer in the case of the expressions in question.

engineer. The observation is that the captain has indirect ways to know whether the flight engineer carried out the diagnose, but he does not (usually) know how to do the diagnose himself—that is, the captain does not completely understand the concept associated to the expression "to diagnose all communication systems (in the aircraft)."

Moreover, there are at least some words or expressions "w" such that, in particular situations of use, an agent A can know the truth value of many sentences that contain "w," although she has an incomplete understanding of "w." This follows from the fact that after addressing "w" to B to achieve a purpose, A knows that "B was asked to do w" is true, or that "I have just asked B to do w" is true, etc.

There are words or expressions "w" such that to gain understanding of "w" requires much more than knowledge of what 'objects' fall under "w" and knowledge of the truth value of sentences that contain "w." This follows from the observation that there are some practices such that one can gain familiarity with them only by practicing them. For example, one cannot claim that someone understands the practice of reading—and hence, that she understands the expression "to read"—if she is not able read. To understand this expression it is not enough for her to try and say when someone else is reading or to try and have someone read something for her. For she can be fooled far too easily and hence it is not adequate to attribute to her a relatively sound ability of recognition or prompting the practice of reading. Another example is that of the practice of finding the derivative of a function. Someone needs to be able to find the derivative of a function in order for us to attribute understanding of this practice to her. Once again, it is not very likely that she can recognize or prompt instances of finding a derivative if she cannot find a derivative herself. For there are far too many functions that one can find the derivative of, and the outcome of this process is so intimately tied to the function that one has to find the derivative of so that to recognize when someone found the derivative of a function requires to find the derivative oneself. Something similar can be claimed of such practices as to count (small numbers, days, food items, etc.), to give or receive change (when one pays something in cash), to make a description (of an object, a person, a place, etc.), to follow directions, to measure (with a straight rule, a meter tape), to tell the time, and so on.

What the formal semanticist has to offer

We can compare these observations about incomplete understanding with a number of assumptions that the formal semanticist has to make to substantiate his or her account of linguistic competence.

Firstly, the formal semanticist assumes that language is a use-independent object, and that there is such a thing as a competent speaker that has complete knowledge, or understanding, of such an object. Even if the formal semanticist

assumes that the notion of a competent speaker does not straightforwardly apply to people on the street—i.e., that no-one has perfect knowledge of language—, she also assumes that it makes good sense to go about studying language by considering the idealized notion of a competent speaker. The formal semanticist assumes that, even if no-one in the end is a competent speaker, it is conceptually legitimate as far as his/her study of language is concerned to concentrate his/her study on the concept of a competent speaker. This claim can be substantiated by taking a quick look at the notion of an information state, at the notion of linguistic communication, or at the purported relationship between competence and performance. That is, as discussed in §1.2.2, the usual representation of an information state put forth by the formal semanticist is a specification as to which contents of sentences an agent bears an epistemic relation to, and which contents of sentences the agent does not bear an epistemic relation to. Hence, this definition of an information state presupposes that the agent already understands all the sentences of the language—i.e., the agent already possesses linguistic competence (or at least it is presupposed that the agent already understands the sentences that she can use). Moreover, as discussed in some detail in §1.3.4, the model of linguistic communication put forth by the formal semanticist presupposes that the participants of the exchange are already competent speakers, for they already understand the sentences used in the exchange. Participants must decode the literal meanings of these sentences, and on the basis of such meanings they find out the speaker's intentions. Hence, no non-competent speaker can participate in linguistic exchanges (or at least participants are required to be competent regarding the expressions used in the exchange). Last but not least, since competence is one factor, albeit not the only one, at work in the production of language-use, these other factors might interfere with competence and lead to mistakes. Nevertheless, there seems to be no explanation of correct language-use without competence.

Most important for the present argument is the observation that the notion of a competent speaker presupposes that there is a clear distinction, not only conceptually but also temporally, between a phase of language-learning (where the agent acquires understanding of the concept expressed by the word (or, as Fodor has claimed, where the agent understands the link between the word and the concept)), and a phase of language-use. A competent speaker has complete knowledge of language and is in a position to use every sentence thereof.

Secondly, unless the formal semanticist embraces a sort of holism *à la* Davidson or a strong interpretation of the context principle,[27] his/her account cannot make

[27]By holism *à la* Davidson I mean the following. Let us recall that for Davidson a theory of meaning must give an account of how the meanings of sentences depend upon the meanings of words (without conceiving of meanings as entities). At the same time, he claims that the meanings of words are subsidiary to the meanings of sentences, because words serve extra-linguistic activities "only in so far as the words are incorporated in (or on occasion happen to be) sentences [...Hence,] there is no chance of giving a foundational account of words before giving

room for knowing the truth value of sentences without knowing the meaning of its component words and expressions. But if one embraces holism *à la* Davidson or a strong interpretation of the context principle, knowing the meaning of words is reduced to knowledge of the combinatorial (syntactic and truth functional) properties of "w," and of the truth value of (many) sentences that contain "w" and their logical relationships.

Thirdly, it seems that for the formal semanticist the important part of the epistemic task of the subject, or the only part worth modeling, consists in establishing epistemic relations to (already understood) sentences (e.g., to know the truth value of the sentence). This theoretical reconstruction of the epistemic task seems to leave room for claiming that to gain knowledge of the world consists in gaining knowledge of the truth value of a lot of sentences—or that this is the only relevant part of this process as far as the formal semanticist is concerned.

The conflict

There is a conflict between the above-mentioned assumptions made by the formal semanticist and the three observations based on incomplete understanding.

To begin with, there is a clear conflict between, on the one hand, the informal observation that, at least for some expressions, learning their meaning does not strictly precede the ability to use them to achieve certain purposes, and, on the other hand, the formal semanticist's appeal to the concept of a competent speaker. For the competent speaker's correct use of expressions is supposed to be partly caused by her knowledge of the meaning of these expressions, and this presupposes a strict distinction between a phase of language learning and a phase of language-use. The formal semanticist assumes that it is conceptually acceptable to study language just by focusing on this notion of a competent speaker. But by doing this he/she is going against our first criterion of adequacy, according to which the account should preserve our descriptions of our language-use in everyday life.

---

one of sentences" (Davidson, 1973, p. 127). These two commitments imply liability to a third one: that the specification of the meaning of a sentence cannot be given independently from the specification of the meaning of many sentences in the language. The word holism is obvious in the following sense: neither the meaning of a word nor the meaning of a sentence is specified independently of the meanings of all (or at least many other) sentences in the language are.

By the strong version of the context principle I mean that the meaning of an expression is the contribution it makes to the meaning of the sentences it can appear in.

The difference between holism *à la* Davidson and the strong version of the context principle is the following. According to the latter, only the compositional contribution to the meanings of sentences is relevant as far as the meaning of expressions is concerned. However, according to former, there are also connections between sentences that are relevant to the meaning of expressions, such as entailment. For instance, according to the former, the entailment between "John is a bachelor" and "John is not married" is constitutive of the meaning of "bachelor." Hence, the sentence "John is not married" has to do with the meaning of "bachelor," notwithstanding the fact that "bachelor" does not appear in it.

Moreover, the notion of a competent speaker also goes against the second criterion of adequacy, which consists in making distinctions only when they preserve our descriptions of language-use in everyday life. The informal observations entail that, at least for some expressions, there is no distinction between a phase of language learning and a phase of language-use. Hence, the notion of a competent speaker does not meet our criteria of adequacy.

Another conflict exists between the formal semanticist's assumption that knowledge of the truth value of a sentence depends on knowledge of its literal meaning, that is (when he/she does not embrace holism *à la* Davidson or a strong interpretation of the context principle). This formal semanticist accepts that one can know the literal meaning of a sentence without knowing its truth value, but not the other way around. The truth value of a sentence depends, according to the standard account, on the meaning of the sentence and the way the world is. Likewise, knowledge of the truth value of a sentence depends on knowledge of its meaning and of the way the world is. But there is the informal observation that, in the case of sentences that one can incompletely understand and use correctly in a situation to achieve certain purposes, one can know the truth value of related sentences without completely understanding them (because understanding a sentence depends, among other things, on understanding the words that it contains, and because one can incompletely understand one of these words). One cannot overlook this observation without going against our descriptions of our uses of language in everyday practices. That is to say, this assumption does not meet the first criterion of adequacy, according to which the account should preserve precisely these descriptions.

The informal observation that there are expressions that require practical knowledge in order to be understood shows that the formal semanticist's model of the epistemic task of the subject is not good enough—i.e., that at least there are important aspects of linguistic understanding that it does not model. For it seems that the only epistemic relation worth modeling on the part of the formal semanticist consists in knowledge of the truth value of sentences. But why, on the face of the informal observation, is practical knowledge not worth modeling? Why, for example, the agent's epistemic relation with the concepts of reading, giving back change, measuring, etc., must be reduced to knowledge of the truth value of sentences and their logical relations?

Likewise, if the formal semanticist embraces holism *à la* Davidson or the strong interpretation of the context principle, this model does not seem to be good enough on the face of words referring to (certain) practices the understanding of which requires practical knowledge. The formal semanticist's model of the epistemic task of the subject fails the first criterion of adequacy.

2.3 A descriptive view of communication

2.3.1 Against the code component of linguistic communication

In my criticism of formal semantics I presented an argument based on the idea of incomplete understanding. This idea consists in that our descriptions of language-use in everyday life—i.e., our descriptions of our experiences of, and our reactions to, our uses of language in everyday practices—are such that we often refrain from attributing complete understanding of some of the expressions used in the linguistic exchange to the speaker or to ourselves. One of the consequences of taking this idea seriously is that we require an account of communication that is different from what the formal semanticist has to offer. This shall be the topic of the remaining of this chapter.

Indeed, the idea of incomplete understanding is not compatible with the hybrid model of linguistic communication propounded by the formal semanticist. But where exactly lies this incompatibility? Let us briefly recall where the hybrid model comes from. The account of linguistic communication is based on an account of language and an account of communication. Language is conceived in terms of a set of rules that can be studied independently of people's uses of language. Communication is conceived as the interpretation of a communicative action. Thus, linguistic communication is conceived as the interpretation of a speech act (i.e., a particular kind of communicative action), and this interpretation requires knowledge of the rules of the language to which the uttered sentence belongs.[28]

There are two interrelated presuppositions to this account. It is assumed that there is a determinate message that the speaker wants to convey to the hearer.[29] This message, in the analysis examined in chapter 1, is conceived as the content of an informative intention. An informative intention is the intention to inform that p, where p is a proposition or a semantic content. The speech act that intends to transmit this message is performed with a communicative intention, that is, the intention that the informative intention be recognized. The recognition is successful, among other things, if the hearer determines which proposition p is the content of the informative intention.

Moreover, it is assumed that the content of the message of a linguistic exchange (the proposition p), must be somehow 'in' the speaker (hearer). For instance, it is usually claimed that p must be the object of the speaker's intentional state. The

[28]For a more detailed presentation of this model, see §1.3. For discussion, see §1.4.

[29]See, for instance, Searle's well-known quote: "Human communication has some extraordinary properties, not shared by most other kinds of human behavior. One of the most extraordinary things is this: If I am trying to tell someone something, then (assuming certain conditions are satisfied) as soon as he recognizes that I am trying to tell him something and exactly what it is I am trying to tell him, I have succeeded in telling it to him" (Searle, 1969, p. 47).

account of communication is, or at least contains, an account of the transmission, or duplication, of this determinate message from the speaker to the hearer. That linguistic communication is successful then consists in that the message 'in' the hearer is the same as the message 'in' the speaker.[30]

Now, although not every formal semanticist sees it in the same way, most of them agree that the role that language plays in communication can be characterized by the hybrid model of communication.[31] The hybrid model, as its name indicates, is a combination of the code and the inferential models of communication. The hearer decodes the linguistic meaning of the uttered sentence, and on the basis of this meaning and some relevant factors of the context of utterance, she infers the content of the speaker's communicative intention.

The linguistic meaning decoded by the hearer is the literal meaning of the sentence. Language is thus a code between signals (syntactic descriptions of sentences) and messages (literal meanings, constructed from semantic rules). In the hybrid model, this code is assumed to be shared between speaker and hearer prior to the linguistic exchange. The formal semanticist claims that this code, or at least its 'structural' aspect, is her object of study.

It is worth noting that if this code is shared between speaker and hearer, this means, among other things, that this code is somehow 'in' the speaker as well as 'in' the hearer. This assumption gives rise to the idea that semantics can be confined to the study of properties and abilities that can be ascribed to individual agents. This is what I have called in chapter 1 the formal semanticist's commitment to the 'individualist frame of reference'.

Now, according to the idea of incomplete understanding, it is not uncommon that people have incomplete understanding of many expressions that they successfully use in their linguistic exchanges. This shows not only that a person has partial, or limited understanding of many concepts, but also that this understanding is different from person to person.

Since this informal notion of understanding a concept, as well as the theoretical notion of knowledge of a linguistic code, aim at representing the same notion of linguistic meaning of words,[32] we reach an incompatibility. For if the idea of incomplete understanding and the hybrid model are both correct, we should claim that it is not uncommon that people do not successfully communicate *with language*, since they do not share, before and after the exchange, the linguistic code. But is this claim acceptable?

[30]See, e.g., Pagin (2008b) for a defense of this idea.

[31]For discussion, see §1.3.4.

[32]A clarification remark is in order. The notion of linguistic understanding that features in the idea of incomplete understanding is primarily linked to words. Moreover, the notion of linguistic understanding as knowledge of the linguistic code requires knowledge of the lexical and structural meanings of words, as well as knowledge of the semantic rules of composition. Thus, both notions verse over representing the linguistic meaning of words.

In our everyday life linguistic communication is, more often than not, successful. In our day-to-day practices we talk to one another, chitchat, gossip, give speeches, read messages, journals, books, write emails, papers, love letters, etc., and we go about doing these things in a fluent way—or at least so it seems most of the time. Our everyday linguistic transactions go almost unnoticed.[33] Regardless of the fact that problems do sometimes arise, we seldom think that we could not communicate at all with someone, or understand at all a piece of text—unless she or it belongs to a linguistic community quite different from ours, but then she or it would not count as part of a day-to-day practice. Clearly, all these linguistic practices would not be fluent if linguistic communication were unsuccessful.[34]

This is the incompatibility: linguistic communication is more often than not successful, but if the idea of incomplete understanding and the hybrid model are both correct, we should claim that it is not uncommon that linguistic communication is unsuccessful. This is a *reductio ad absurdum* from which we should conclude that the conjunction of the premises is false. Either we give up the idea of incomplete understanding or we give up the hybrid model of linguistic communication. Perhaps not surprisingly, I suggest we should give up the hybrid model.

I propose that we refrain from making a commitment to the claim that language is somehow 'in' the speaker or 'in' the hearer. For otherwise the very idea that an agent incompletely understands something that is 'in' her might easily lead us to all kinds of philosophical troubles. I propose that we do away with the commitment to the 'individualistic frame of reference'. This means that the study of semantics, in particular, and of language, in general, must not be restricted to the study of properties that can be attributed to individual agents.[35] However, note that if we agree with this proposal, we are also doing away with the presupposition that a model of communication consists in transmitting, or duplicating, something from the speaker to the hearer: we need an entirely different model of communication.

I take it that the explanatory task of such alternative model of communication must be the following:

[33]The fact that our everyday linguistic transactions go almost unnoticed shows that the present observation comes necessarily after reflexion about our linguistic practices. Perhaps surprisingly, it is an observation that is confirmed by our usual lack of attention to it, and thus we do not run into it on an everyday basis. It has to be prompted by an examination of how frequently we experience problems to communicate and how frequently we observe such problems in other people.

[34]Consider the following quote from Peter Pagin: "[A] language wouldn't be a good communicative device unless speakers of the same language standardly and reliably succeed in getting each other right when using it. And it wouldn't be a good communicative device unless speakers, by common sense standards, had frequent evidence of success, in the form of 'smoothness of conversation [...] frequent predictability of verbal and non-verbal reactions, and [...] coherence and plausibility of native testimony', to borrow Quine's phrase" (Pagin, 2008b, p. 107).

[35]I will develop the outline of an alternative semantics along these lines in chapter 4.

1. It has to explain the observation that linguistic communication is more often than not successful.
2. It has to explain the observation that, when we successfully communicate, there is a theme that we share with our interlocutor.
3. It has to allow for successful communication despite incomplete, and uneven, understanding of words on the part of the participants.

I now turn to providing the outline of such an account.

2.3.2 Intentions vs. purposes

Given that the view on linguistic communication that we will put forth here has some similarities with the traditional account of communication (which goes back to Grice's (1957)), we might well start by contrasting the core elements of both proposals. In the case of the traditional account of communication the core element is that of a communicative *intention*; in the present account the core element is that of a *purpose*.

In the traditional account, communication is defined as an interaction between rational agents, and part of what is taken to define rationality is that the agent's rationality is a property of individual agents. Communicative actions, *qua* rational actions, are performed with an intention, and therefore, to interpret these actions is to recognize such an intention. An intention is conceived as an internal state of an individual that consists of a particular attitude (i.e., that of intending) directed towards a determinate content. A communicative action is characterized as an action performed with a communicative intention. The three main characteristics of this account of communication are: (i) communication requires recognition of a communicative intention; (ii) the intention has a determinate content; and (iii) intentions are internal properties. Hence, communication is either successful or not, since the content of the intention is either recognized or not.

Before we go on to list the main characteristics of what I shall call 'purposes', let us consider the following example. Suppose that John is in a classroom and that instead of paying attention to the lecture he is interchanging looks with Mary, a girl sitting not too far away from him. In fact, suppose that they have been doing this for a couple of lectures now so that John thinks that it is high time for him to do something about it. He writes down in a little piece of paper the following: "Coffee after the lecture?". He folds the paper and asks the person next to him with a gesture to pass it along from hand to hand until it reaches Mary, who has been observing the entire operation. Even before the paper reaches her hand, Mary may have a couple of ideas as to what John is up to by sending her such a piece of paper. Indeed, John's action can be described from different perspectives, some more direct than others, so to speak. We could say that the ultimate purpose of the exchange is company, intimacy, and sex, which is

a description of what John is up to by considering the innate attitudes that he has just because he is a human being. More directly, John's attitude can be described simply as his feeling up to hang out with Mary to feel the butterflies in the stomach, to have a nice time at dinner, at the movies, eating an ice cream, etc.[36] More immediately, John's attitude can be described as a request to go and grab a cup of coffee and get to know each other a bit more.[37] Finally, the most direct way to describe what John is up to with this little piece of paper is for Mary to take the paper in her hands and read it.

I wanted to bring out with this example the following characteristics of a purpose: (a) a purpose has a Janus-faced nature: it has innate as well as socially shaped aspects; (b) a purpose is not something determinate—it depends on how it is described and what counts as a recognition of it; and (c) some purposes are only achieved to some extent.[38]

A very important aspect of purposes is that they have a Janus-faced nature: they can have both innate and socially shaped aspects. To gather food is a clear example of an innate purpose. To go to the supermarket to buy food has innate as well as socially shaped aspects. Another example of an innate purpose is to direct other people's attention to objects by pointing, eye gaze, or by manipulation of the object. To use words to direct people's attention has both an innate and a socially shaped aspect. To bond and create emotional strings with someone is an innate purpose. But without living in the culture that we live, we cannot have the purpose of saving some money to buy our partner an *iPod* for Christmas as a token of our love.

[36]There is an innate aspect to this attitude, but it is actually more of a 'culturally shaped' one. For the most common things to do on a date depend a great deal on the culture, and are limited by the society—e.g., three hundred years ago people could not go to the movies or get an ice cream.

[37]This description is also very conventional and depends a great deal on the cultural setting. Eight hundred years ago such a note with the inscription "Coffee after the lecture?" could not have been understood: there were no lectures, let alone coffees after lectures.

[38]Another characteristic of purposes, not listed under (a)–(c) in the interest of brevity, is that a purpose can be individual or collective. For instance, an individual purpose is to win a casual game of chess. An example of a individual purpose that is also collective to a certain extent is my obtaining a PhD diploma. My supervisors, my family, and some people in my university can be said to share this purpose with me as well. And this is not just because they send me good thoughts. It is because if they did not do what they do, I could not obtain my PhD diploma, and because some of the things that they do are purposefully directed to my obtaining it. (To be sure, the relevance of these persons is different; some are more relevant for this purpose than others.) An example of a collective purpose is to win a football match. I take it that this is an inherent characteristic of purposes without requiring further analysis, given that I reject the 'individualistic frame of reference'. On the other hand, in the case of intentions, given their individualistic nature, the problem arises how to account of these attributions of purposes to a collectivity in terms of attributions of intentions to the individuals that make part to this collectivity. This problem has been called "the problem of collective intentionality" (see, e.g., Searle 1995).

A purpose is not something that you can have independently of where (and when) you have grown up (see fn. 36 and 37). Furthermore, which purpose someone has depends on the practices she is involved in. Consider another example. Suppose that "w" is an expression that refers to a practice p. Say p is the practice of preparing a cappuccino. Suppose that A wants the product of p, that is, a cappuccino, but she is familiar with p only to a limited extent because she is only familiar with its product. Suppose B is not familiar with p at all because she does not recognize the product nor is she able to do p. Clearly, they live in a society where there are people like C, who are completely familiar with practice p. Now, suppose A, B and C are familiar with the practice of addressing a word to someone to achieve a purpose, and that B is a subordinate of A. In order for A to obtain the product of p, she can address to B the expression "w!". Then B goes to C and asks "w?" to obtain the product of p. That is, in order for A to enjoy a cappuccino, she can ask B for a cappuccino, who in turn can obtain one from C. When B asks "w?" to C, C can recognize B's purpose because C is familiar with two things: the practice of addressing a word to someone to achieve a purpose and with practice p. The interesting part of the story is that although B has been attributed the purpose of obtaining the product of p, i.e., a cappuccino, B is not familiar with it nor with the practice that produces it. Her purpose is socially shaped.

This claim is closely related to the idea of incomplete understanding. People with incomplete understanding of words that refer to products of practices can still have the purpose of obtaining these products. For example, suppose that you submit your documents to apply for a visa to The Netherlands (because you want to travel to this country to visit some friends). Your action is purposeful, but the purpose of this action is not defined by something in your head. For your understanding of a visa might well be incomplete, that is, you might well not know all there is to be known with regards to having a visa to The Netherlands (say, in terms of rights and duties, laws and international treaties with respect to visas in general and applying to this country in particular, etc.). However, your purpose is to apply for *this* visa, regardless of your ignorance of exactly what you are applying for.

A purpose can be described from different perspectives, which entails that there is no such thing as *the* purpose (defined independently of the sentences, signs and items used in the exchange) that both speaker and hearer must recognize (or possess) at the same time. Coming back to our example of preparing a cappuccino, note that C, by being familiar with the practice of preparing a cappuccino, can recognize the achievement of this practice by tasting the substance in her cup, or by checking the coffee machine, the ingredients used in the preparation, and the form of preparation. A can recognize the achievement of this practice by tasting what is in the cup that B gave to her, and finally, B can recognize the achievement by being confident that C gave her what she asked for, and by noticing the satisfaction in A's face when she receives and tastes the cappuccino.

Finally, sometimes it is very clear when a purpose was achieved, but other times the achievement is more of a matter of degree. Clear cases of achieving a purpose are when someone receives a PhD (there is a ceremony to commemorate the achievement), or when you buy an *ipod* for someone and she has it in her hands. On the other hand, the achievement of certain other purposes is less clear. For instance, to reduce poverty in a country is a purpose the achievement of which is a matter of degree, and the same can be said about the purpose of coming off as a confident person when you talk in public. You can point to improvements or deteriorations, but sometimes there is just no clear point where a purpose was achieved.

2.3.3 Communicative success

Linguistic communication is a very complex phenomenon. It can be explored from different perspectives (e.g., communicative actions, information transmission, conventions, communicative experience, language acquisition, human-machine interface, socio-linguistics, etc.) and for different purposes (e.g., to account for the notion of intersubjectivity, to study the relation between brain damage and language impairment, to study the physiological mechanisms that allow for speech and hearing, for software-building purposes, etc.). This complexity notwithstanding, I shall narrow down this phenomenon to a manageable size by restricting myself to a particular perspective. I take it that the concept that lies at the heart of linguistic communication is that of communicative success. In other words, I assume that to account for linguistic communication is to explain when and why communicative success occurs.[39] The concept of communicative success is related to the concepts of communicative action and understanding, and the idea is that communication is successful when the hearer understands the speaker's communicative action.

The gist of the descriptive view of communication is that, to some extent, every purposeful exchange between people by means of linguistic expressions is linguistic communication insofar as it can be considered successful.[40] The main requirement of this account, then, is to explain the conditions under which we normally call linguistic exchanges successful. There are two observations that

[39]The ensuing discussion will lack an ingredient that is not only very dear to formal semanticists, but which indeed is of central importance for a general account of language, namely, the nature of the information carried by language. I will come back to the issue of the information carried by language in chapter 3.

[40]A note on methodology: a champion of the descriptive view of linguistic communication does not conceive of her object of study as a natural kind, but as a social kind. Whether a particular linguistic exchange is successful or not is something that depends on our experiences and reactions to this exchange. Thus, the phenomenon must not be approached with the methodology of physics, but by bringing out the structure of our descriptions of our experiences and reactions to our linguistic exchanges. This is why the account is called "a descriptive view."

should lead the way, namely, that linguistic communication is successful most of the time, and that there are different standards of success.

The successfulness of a linguistic exchange, according to this account, is evaluated along two different axes: experiences of success and whether the purpose of the exchange was achieved. A few remarks to substantiate the connection between communicative success and each of these axes are in order.

Experiences of communicative success

It seems almost tautological that communication is successful when the hearer understands the speaker's communicative action. In turn, the hearer's understanding is internally related to her experience of a successful linguistic exchange. But it is perhaps more accurate to claim that her understanding is internally related to her lack of experience of a problem in the linguistic exchange. The 'lack' of experience is explained as follows. Given that most of the time we do not pay attention to language, but to what we, or our interlocutor, want to convey with language, the experience of communicative success is lack of experience of a problem to understand the speaker's communicative action.

Two clarifications are in order. First, it seems quite nonsensical to claim that communication can be successful regardless the experience of a problem with the linguistic exchange. Take the case of the hearer. Can we claim that the exchange between speaker and hearer is successful regardless of the experience, on the part of the hearer, of a problem with the exchange? Certainly not. Though the purposes of the exchange could be achieved by sheer luck, we do not feel inclined to say that communication was successful in this case.

Second, it is worth underscoring the radical change of perspective propounded here, as against mainstream theories of (linguistic) communication. Whereas the present approach relies on the mostly unreflective experiences that compose what we call communicative success (in everyday life), according to mainstream theories communicative success is something of an 'Eureka!' experience. For instance, according to one of Grice's proposals, wholeheartedly supported by Searle, communicative success consist in the hearer's recognition of the speaker's communicative intention. Such a recognition must consist in the hearer's realizing that the speaker has an informative intention with a particular content, and that she (the speaker) intends the hearer to recognize the informative intention. How does this reconstruction square with our almost never experiencing such recognition? When I discuss with someone about football, say by claiming that Real Madrid's coach, Jose Mourinho, is a better coach than Pep Guardiola, Barcelona's coach, regardless the better players in Barcelona's team, I am not first entertaining a proposition, wrapping it up with the intention to inform her about it, and, on top of it, wrapping it up with the intention for her to recognize the previous intention; and nor is she recognizing that. Our experiences are about football

teams, coaches, players, matches, etc.[41] The view propounded here eschews such an over intellectualized picture by conceiving of (linguistic) communication as an embodied, embedded, mostly unreflective activity of human agents—by embodied I mean an activity that involves doing something with one's body, and by embedded I mean an activity that is part of a larger framework of human activities and experiences.

Inasmuch as we are familiar with our language and culture, only seldom do we experience that a linguistic exchange is unsuccessful when this exchange takes place with another person familiar with our language and culture. Likewise, the less familiar we are with the means of the linguistic exchange, and the less we recognize the (culturally shaped) purpose of the exchange, the more will we experience a problem to understand the communicative action.[42]

It is worth emphasizing that the hearer's understanding *is not being reduced* to her experience of communicative success when we claim that the former is internally related to the latter. To understand someone's communicative action is more of a relation than a particular experience. After all, we can go through such an experience and later on realize that we were mistaken because we did not understand the speaker's point. However, that there are mistakes and misunderstandings is not a problem for claiming that there is an internal relation between the hearer's understanding and her experience of communicative success. For this kind of relation is not meant to uncover necessary or sufficient conditions for two things to obtain together. The gist of an internal relation is rather that we cannot conceptualize one thing without conceptualizing the other. In normal circumstances, not to have an experience of success amounts to failure of communication, and to have an experience of communicative success (or lack of experience of a problem) constitutes the successfulness of the exchange. But what the normal circumstances are is determined by more factors than the mere occurrence of such an experience, and it is precisely a discussion of the two axes of the degrees of communicative success that addresses this point.

[41] Inasmuch as "intention" means a conscious and reflective experience with the purpose of reaching a particular goal, we do not very often entertain intentions about intentions in our everyday linguistic exchanges. Moreover, is it adequate to defend such an over intellectualized reconstruction by claiming that one thing is our reconstruction and another is our experience of communicative success? But then again, what is it a reconstruction of? How do we go authenticating the adequacy of such a reconstruction?

[42] The experience of a problem with communication comes in different flavors, but mainly in terms of discomfort, exasperation, and maybe a certain amount of anguish. Think of situations in which a subordinate fails to understand what we want from him (or, vice versa, when we do not understand what our boss wants from us), or of how awkward it seems to communicate in a country the language of which we only master to a limited extent. To be sure, there are other aspects to this experience, but for our present purposes only this rough characterization will suffice.

Achievement of purposes

Only very rarely does a linguistic exchange serve no purpose. We human beings are purposeful agents, and our actions are usually made for a purpose.[43] Moreover, if the purposiveness of an exchange is not taken into account, we seem to lack descriptive elements to assess whether a linguistic exchange is successful or not; successfulness would be only stipulated as a relation between a message 'in' the speaker and a message 'in' the hearer, but we would be unable to monitor this relation as we go about our day-to-day activities.

This does not mean that the successfulness of an exchange must be defined in terms of behavioral criteria. Or that the achievement of the purposes of the exchange must be so defined. More often, a purpose can only be defined by means of a sentence that the participants agree to be the one that determines the purpose of the exchange. What remains is our experiences that the purpose was achieved or not, as well as our reactions, in terms of doings and sayings, to these experiences. For instance, I can have a linguistic exchange with my brother to convince him that a Peugeot is the best choice if he were to buy a car. The successfulness of this exchange need not be my brother's buying a Peugeot. Instead, it can consist in that my brother would say that the best choice to buy a car is a Peugeot, if he were to buy one.

Many purposes associated with the exchange are not achieved immediately after the exchange. Our experience of the exchange is linked to the fulfillment of more direct purposes. More indirect purposes are monitored, so to speak, via some evidence that the purpose is going to be achieved (whether this is so or not in the end). This evidence should suggest that the purpose of the exchange was clear, and that its fulfillment is suspended for the time being, or that it is underway.

What we observe is that the participants in the exchange take familiar steps that usually lead to the achievement of those indirect purposes, or at least they take steps that show that the purpose is clear. Hence, I will coin the term of "going along with the practice" to refer to this experience that things seem right, that so far so good, since it seems that a particular indirect purpose is at least clear, and that is going to be achieved. I contend that this is what we experience most of the time in communication and, furthermore, that most of the time, as a matter of fact, many direct and mediate purposes are achieved. This is why linguistic communication seems to us successful most of the time.

[43]Human beings have an innate ability to recognize purposeful actions. This capacity is manifest in young children's dispositions to discriminate events where a person is doing something purposefully (with the "attitude of intending"), from events where something just happens to the person (by chance or without her paying attention).

Structure of our descriptions

The two axes of degrees of successfulness allow us to distinguish different situations where we have different descriptions of communicative success. There are four main situations represented by each of the four regions determined when we plot these two axes by means of a 2×2 table:

		Experience	
		Successful	Unsuccessful
Purposes	Achieved	A	B
	Not achieved	C	D

Region A represents situations where the hearer experiences that she understood the speaker's communicative action (or better, where she did not experience any problem with the speaker's communicative action), and where we would judge (from the perspective of the speaker, the hearer, a third party, or from all of the above), if asked to reflect about it, that the purpose of the exchange was achieved or that it is underway, or at least that it was clear for both parties in the exchange.[44] Situations like these characterize the highest degree of communicative success.

By contrast, region D represents situations where the hearer experiences problems in the exchange and where the purpose of the exchange was not achieved (from any point of view). Situations like these characterize the lowest degree of communicative success.

Region C represents situations where communicative success is not clear. On the one hand, the hearer does not experience any problem to understand the speaker's communicative action, but, on the other hand, she or her interlocutor think that the purpose of the exchange was not achieved, or she thinks that the speaker had a different purpose in mind than she had previously thought. This disparity—i.e., that there is experience of success but the purpose was not achieved—must be seen from after the actual linguistic exchange, since during the exchange all went apparently right—this is why the experience is that of success. It is only when the participants, or just one of them, looks back and reflects about the exchange, that it is deemed that the purpose was not achieved. Situations like these are cases where the hearer recognizes that the speaker was lying, or that one (or all) of the participants in the exchange was mistaken about the object of the exchange, and so on.

Situations like those in region B are lived situations of discontent, such as when one is trying to find the right word to use in a conversation. The struggle to find the right way of expressing oneself need not get in the way of achieving

[44] A linguistic exchange usually has more than one purpose, and they are not all necessarily the same for every participant. The recognition of this is what leads to the conclusion that there are different standards of communicative success, which depend on the purpose against which the exchange is being assessed.

the purposes of the exchange, but the feeling that the exchange could go better is very present. When this situation is recalled afterwards, we might say that we obtained what we wanted, and we might remember the discomfort and the motivation to perform better. Some cases of language learning (specially a second language) are characteristic of this region.

2.3.4 Fulfilling the explanatory task

Linguistic communication is more often successful

In our everyday life, linguistic communication is more often than not successful. The factors on which descriptions of communicative success depend are usually present in our day-to-day linguistic exchanges. That is, in everyday life: (a) there is familiarity with the means used in the exchanges; (b) the purposes are usually recognized (note that (a) and (b) account for the axis of the experience of success); and (c) the purposes of the exchange are usually achieved.

We must start with a principled problem that the present account faces to show the intended claim that the factors on which descriptions of communicative success depend are usually present in our day-to-day linguistic exchanges. For the present work is a conceptual undertaken, whereas the claim is an empirical statement. Hence, the most that can be aimed at here is to provide good reasons that the claim is true.

To show that (a) is the case, that is, that in everyday practices there is familiarity with the means (i.e., words and sentences) used in the exchanges, we might consider that our experiences with signs change with past experience. For instance, it is almost impossible not to recognize a word-token as a meaningful symbol once one is familiar with the word-type. If one overhears a conversation in one's mother tongue, one cannot help but recognize the words used. By being socially shaped—i.e., by being introduced as a participant in social practices, such as by interacting with the caretaker, by being educated at school or college, by becoming a citizen, etc.—, people become familiar with words and expressions that are used in their day-to-day activities.

To show that (b) is the case, that is, that the purposes of everyday practices are usually recognized, we need to say a few words about recognition of purposes and familiarity thereof. The speaker's purpose is constituted by her having the "attitude of intending," by her using the sentence that she uses, by being already involved in a practice in which the linguistic exchange fits, and by making part of the cultural environment that she lives in. The speaker's recognition of the purpose of her communicative action consists in her intending the action of uttering a particular sentence, and by being familiar with the situation in which the sentence will be uttered and by intending (some of) the consequences of her uttering that sentence. The hearer's recognition of the purpose of the linguistic

exchange is based on her familiarity with the sentence uttered by the speaker, with the practices that the speaker is already involved in, and with hers and the speaker's common cultural environment. In the case of day-to-day practices, these conditions for recognition of purposes are met in the case of both speaker and hearer.

Finally, to show that (c) is the case, the claim that the purposes of the exchange are usually achieved is supported by two observations. First, there is a close relationship between failing to achieve a purpose and experiencing a problem with the action that was purposefully addressed to achieve a purpose. Moreover, we seldom experience a problem when we have linguistic exchanges in our everyday life. Second, to be familiar with practices means that one possesses the necessary skills to warrant a high rate of success to perform these practices. We are familiar with day-to-day practices, which means that the purposes of these practices in which we are involved in everyday life are normally achieved.

There is a theme that we share with our interlocutor

The second point in the explanatory task is that when we successfully communicate, there is a theme that we share. When you say that Barrack Obama should not have won the Nobel price of peace and I say that you are wrong, we would nevertheless agree, if asked and reflect about it, that we are talking about the same person and the same price; that we share a theme about which we have conflicting opinions. Now, the line of though developed here is that philosophical difficulties arise when we try and provide a metaphysical analysis of the theme that we share in a conversation. To avoid these difficulties, we might as well refrain from reifying the theme and claim that it is not real; it is not an object that can be located in any realm.

According to my rejection of an 'individualistic frame of reference', I will argue that there really is no theme that is shared in a conversation. Hence, if there really is no theme that we share, why does it seem like we actually do? I still need to show why our descriptions of successful communication include such a theme. The answer to this question will be that it is relevant that the participants of a linguistic exchange 'assume' (though usually in an unreflective way) that they do share a determinate theme.[45] That is, in order to explain our descriptions of our

[45]There are notable similarities between the idea of a phenomenological experience, according to which we assume that we share the sentence's content with our interlocutor, on the one hand, and what Stenning and van Lambalgen (2008) call a *credulous interpretation*, on the other hand. According to these authors, people can interpret a discourse by taking (at least) two stances: credulous and skeptical. A credulous stance is such that, "[a]s we interpret the discourse, we take our task to be to construct a model of the [discourse] which is the same as the speaker's 'intended model', and we assume that we are to use whatever general and specific knowledge we have, including the assumption that the speaker is being cooperative in constructing her discourse, to help us guess which model this is" (p. 22). As opposed to this, a skeptical stance is one "in which we do not use any information save the explicitly stated premises, and we are to

experience of a shared theme we do not need to show that it is literally true. It is enough to show why people have such an experience.[46]

The participants of a linguistic exchange assume that they share the content of the sentence to assume a standard, and to assume that they know the standard, so that their practices are carried out.[47] We can illustrate this point by means of an example. Suppose that A tells B: "You have to give me 3 Euros for each cappuccino that I sell to you; I've sold twenty cappuccinos to you; how many Euros should you give me?" B answers: "60 Euros."

As far as this short exchange goes, A and B can take for granted that they agree. This means that they take the sentence "60 Euros" to mean the same, that

entertain all possible arrangements of the entities that make these statements true" (ibid.). We must bear in mind that a model of a discourse, as it is conceived in Stenning and van Lambalgen (2008), is a model that makes true all sentences in the discourse and that is partial with respect to a universe or domain of reference (in some cases, this universe is assumed to be the 'real world'). The partiality of the model of the discourse is what helps make sense of the idea of "constructing a model." The main point of similarity between my idea of a phenomenological experience and Stenning's and van Lambalgen's credulous interpretation is that the hearer assumes that she is constructing *the* model intended by the speaker, that is to say, that the hearer assumes that she shares with the speaker the model that the latter is constructing with her discourse. The main difference is that a credulous interpretation goes further than the phenomenological experience does by prescribing what kind of information can be appealed to in the construction of the model. The phenomenological experience, on the other hand, just consists of the (conscious though not necessarily reflective) assumption of a shared model, or content. Furthermore, insofar as the hearer, by taking the *skeptical* stance, assumes (consciously though not necessarily reflectively) that there is already a determinate information, meager as it may be—i.e., only the information explicitly stated in the premises—, that is shared between speaker and hearer, the hearer is already having the phenomenological experience of a shared content. Thus, credulous and skeptical stances seem to differ just with respect to the amount of information that is assumed to be shared between hearer and speaker. In the former case, a 'big' model of the discourse is assumed, whereas in the latter case only the information necessary to determine "all possible arrangements of the entities that make [the discourse] true" is assumed. However, the fact that the hearer obtains this information from the speaker's discourse cannot but depend on, *pace* Stenning's and van Lambalgen's purposes, knowledge of an independently established meaning of these premises that hearer and speaker must already share. If we assume that this information is precluded from conscious (and unreflective) thought, and that a model of the discourse cannot but be part of conscious thought, there is a similarity between having or not a phenomenological experience of shared content, on the one hand, and credulous vs. skeptical interpretation, on the other. However, it is worth bearing in mind that the former is supposed to leave open the possibility that there is no content or meaning that hearer and speaker, as a matter of fact, share, whereas the latter seems to assume, at least implicitly, that the information as to what possible arrangements make the premises true is shared.

[46] A word of caution is in order. I do not intend to show that it is necessary to make such an assumption, but to show that it is good, or advantageous, to make it as far as our everyday practices are concerned, and thath this is the reason why humans possess the ability to make such an 'assumption'.

[47] It is not altogether clear to me at this point how to explain the notions of "assumption" and "knowledge" as they feature in unreflective actions of our everyday practices. This shall remain as a topic for further investigation.

is, they assume a standard and they assume that they know it. They experience that "60 Euros" refers to an object and that they share this object.

When the agreement finds resistance, maybe because B only gives A 50 Euros, the supposition that they share the object referred to by "60 Euros" starts to lose its ground. When this happens, A and B try to coordinate what they mean by "60," or "3," "20," "to give x for each unit," etc. Inasmuch as the agreement finds more and more resistance, A (or B for that matter) tends not to experience that she is sharing and object with her interlocutor.

The value of the assumption that an object is shared in the exchange is the following: (i) people do not need to coordinate all their practices (in the example, A and B only coordinate multiplication and assume that they can count, recognize bills, etc., in the same way); (ii) communication is thereby optimized; (iii) practices can be nested on other practices without consuming too much 'cognitive space'; (iv) problems are easily localized in a particular practice (that is, the relevant point of the example is not whether B can count bills or add up to 60, but to know whether B can multiply).

If the previous paragraphs give a compelling explanation of the fact that people experience communication as an event where they share the content of the sentence, we can draw a number of consequences. First, in a linguistic exchange, only local similarities/differences can be relevant for the exchange—only local discrepancies can be 'experienced', since many other agreements and similarities are assumed. Second, that the purpose of the exchange is achieved depends in the end in the real agreement in practices of the participants (though they do not need to agree in all of their practices, as we shall see in a moment). For instance, that A in the end receives 60 Euros depends on B being able to count bills and add up to 60, and this in turn depends on A and B being able to recognize pieces of paper as bills, etc.[48]

Another important consequence is that, given the characteristics of everyday practices, the purposes of linguistic exchanges can be achieved despite the participant's different degrees of familiarity with practices. For instance, the captain of an airplane can tell the flight engineer: "Diagnose the communication systems!" The captain has indirect ways to know whether the flight engineer carried out the diagnose, but he does not (usually) know how to do the diagnose himself. Thus, if captain and flight engineer were to conduct a further coordination of practices, they will not succeed given their different degree of familiarity with this particular practice. It is because the flight engineer does not bother to question whether the captain knows the standard in question, and because he himself knows this standard and is able to live up to it, that he understands what the captain wants him to do. For as long as the purposes of the exchange are achieved, which de-

[48]This point seems to fit in well with Davidson's (1974) idea that interpretation can only occur against the background of massive agreement. However, in this paragraph I am assuming agreement not in believes, but in assumptions and, more importantly, practices.

pends on each participant carrying out her own role within the shared practice, no problem will be experienced either by the captain or the flight engineer. This point is a key ingredient of the explanation of successful communication despite incomplete understanding.

Successful communication with incomplete understanding

An explanation of successful communication despite incomplete understanding is straightforward in the account of communication developed here. It suffices to show that the two axes of communicative success are usually in region A even though people have uneven and incomplete understanding of some expressions used in their exchanges.

Recall that region A is such that there is no experience of a problem in the linguistic exchange, and the purposes of the exchange are achieved. In the abovementioned example of the captain and the flight engineer (see also the example of the cappuccino) the purposes of the exchange can be achieved despite the captain's incomplete understanding of the expression that he uses. Since he is (more or less) able to determine whether the diagnose of all communication systems was successfully achieved, he is assuming a standard of success and is able to 'monitor' it. Moreover, given that the flight engineer knows how to carry out such a diagnose, he will not show any sign of discomfort or hesitancy. They will both lack any experience of a problem in their communication. The purpose will be achieved since the flight engineer will usually carry out his job (if not immediately, he will usually show that he will do it later), and the captain will be (more or less) able to verify this job.

***

The line of thought developed in this chapter turns around two conflicting perspectives on language, linguistic understanding, and linguistic communication. The assesment 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.

Perhaps not surprisingly, I present two arguments to the effect of showing that the formal semanticist's account must be ruled out, as it does not meet the above-mentioned criteria of adequacy. The gist of the first argument is that the notion of linguistic competence put forth by the formal semantics in order to explain the 'facts' about language and linguistic competence (i.e., systematicity, the infinity of language, and productivity) are not sound, given that these are not legitimate facts to be explained in the first place, and that we cannot postulate their existence without going against our descriptions of our experiences of language-use in everyday life. As the criticism develops, the outline of an alternative notion of linguistic competence starts to emerge: linguistic understanding is more of an embodied ability to deal with linguistic signs within everyday practices. The gist of the second criticism is that our descriptions of experiences of language-use in everyday life point out that, by and large, the speakers of a language have incomplete understanding of many words that they nevertheless successfully use. Some perspicuous observations about situations of language-use show that the achievement of purposes depends on extra-linguistic abilities that need not belong to the same agent. An agent can have some abilities to use signs in order to achieve purposes, but the achievement of these purposes occurs, at least some times, thanks to another agent's extra-linguistic abilities. All the while, however, these signs can be said to carry the same information for both agents. Thus, the information carried by signs transcends the 'individualistic frame of reference', which is an issue that still stands in need of further clarification. In my view, however, the most pressing problem is that the traditional models of linguistic communication are no longer tenable. If information is not 'in' the agents, the model of communication as transmission of information must give its way to a radically different one.

The "descriptive view of communication," as I have called it, is devised to explain the notion of communicative success. There is communicative success when the hearer understands the speaker's communicative action. In agreement with the previously suggested idea of linguistic understanding as an embodied and embedded ability, communicative success is not conceptualized as a merely intellectual ability: we usually do not reflect about our communicative success. The factors on which such a notion depends are our experiences of communicative success and the achievement of the purposes of the exchange. We usually 'go along with the practices' in which we are engaged, and our actions usually succeed. Many of these actions involve the use of signs (e.g., speech, writing, etc.), but it also involves other people that, like us, are familiar with the purposes of the uses of these signs. The successfulness of these actions turn out to depend, it is suggested, on the agents' experiences with these signs and their reactions to these experiences.

In the foregoing we have rejected the dominant rule-based approach to language and linguistic information, and we are left with the task of accounting for an embodied and embedded ability to use signs in our everyday life, and to provide

a framework with which we can explain how the information carried by words can transcend the individualistic frame of reference. Thus, we need to look for insights from alternative approaches to language and linguistic information. In the next chapter I take up the task of reviewing two such alternative approaches, namely, Tomasello's usage-based account of language and Brandom's pragmatic inferentialism.

Chapter 3

Alternative accounts of language and information

The assessment of formal semantics that I developed in the previous chapter 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 signs 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 signs that express those concepts (see §2.1.1). On the basis of this supposition, I developed 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 played a pivotal role in most of the previous chapter, 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 (§3.1), and Brandom's pragmatic

inferentialism (§3.2). In the next chapter I will develop my own account of language and meaning, which is a version of the motto that "meaning is use," where the relevant notion of "use" is underwritten by the notion of a 'role in a social practice'; to this effect, I shall make use of the theory of social practices developed by Theodor Schatzky.

The choice of these accounts is not completely fortuitous, as I will explain in a moment. Unfortunately, there was no time to explore in detail other important theories of language, in particular, Wittgenstein's, Davidson's, Putnam's and Burge's, Horwich's use-theoretical account of meaning, the evolutionary, computational paradigm of Simon Kirby, and Vigotsky's socio-cultural approach to language and thought. Such comparison must remain as a suggestion for future work.

There are three main reasons why I would like to examine here Tomasello's usage-based account of language. To begin with, 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 would like to examine here 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.

3.1 Tomasello's Constructing a Language

3.1.1 A usage-based account of language

Tomasello's (2003) approach to language, which frames itself within the so called usage-based theories of language,[1] is introduced as an alternative to the current dominant approach in linguistics, namely Chomskyan linguistics.

[1] See, e.g., Barlow and Kemmer (2000); Goldberg (1995, 2006).

The Chomskyan revolution in linguistics—which has sustained a number of transformations through the decades—maintains the conviction that natural languages are generated from syntactic rules that govern the structure of sentences. Such rules are stated in terms of abstract syntactic categories, where 'abstract' means that they are independent from the "properties of utterances that are accessible to experience" (Cowie, 2010). Along with such abstract categories, a distinction is posited between what can and what can not be learned by a child during her language acquisition process, since by definition abstract categories cannot be learned through experience. That is "[t]he gap between what speaker-hearers know about language (its grammar, among other things) and the data they have access to during learning is just too broad to be bridged by any process of learning alone" (*Idem*)—this claim is known as the "argument from the poverty of stimulus." According to Chomskyan linguistics, human children are born with a Universal Grammar, which contains the principles that determine the structure of any possible human language. Any particular language is, according to Chomskyans, generated by the rules determined by the Universal Grammar once the main parameters are tuned to the contingent input the child receives from her environment.[2] It is worth noting that, in order for such a line of thought to go through, one must abide by what Tomasello calls the Continuity Assumption, namely, "that basic linguistic representations are the same throughout all stages of child language development—since they come ultimately from a single universal grammar" (Tomasello, 2003, p. 2).

The argument from the poverty of stimulus has been amply debated in the literature and it would take us too far afield to recapitulate here the main lines of argumentation, pro and con.[3] Suffice it to say that Tomasello is particularly short, but in my view effective, in assessing such an argument: he claims that "the principles and structures whose existence it is difficult to explain without universal grammar [...] are theory-internal affairs and simply do not exist in usage-based theories of language—full stop" (*Ibid*, p. 7).[4]

At the background of the opposition between usage-based and Chomskyan linguistics lies a different conception of the nature of language. The conception of the study of language as an abstract and formal description of meaning-independent rules must be replaced, according to Tomasello and usage-based theorists of lan-

[2]Chomsky claims: "It seems plain that language acquisition is based on the child's discovery of what from a formal point of view is a deep and abstract theory—a generative grammar of his language—many of the concepts and principles of that are only remotely related to experience by long and intricate chains of quasi-inferential steps" (Chomsky, 1965, p. 58).

[3]But see, e.g., Pullum and Scholz (2002); Fitz (2009); Cowie (2010).

[4]See also tomasello's brief mention of Chomskyan linguistics' internal problems about language acquisition (*Ibid*, p. 7): (i) the linking problem: How can the child link her abstract universal grammar to the particularities of the particular language she is learning? (ii) the problem of continuity: How can we understand the changing nature of children's language across development if universal grammar is always the same? See also the critique of universals (*Ibid*, §2.1.3, pp. 19ff).

guage, by a conception where the essence of language is its symbolic dimension—i.e. how it is used in everyday life. The role of grammar is thus derivative from the symbolic dimension. Grammar exists in as far as it facilitates and enhances the symbols humans use to communicate with one another. Grammar is a by-product of human pattern recognition capacities applied to communicative settings: patterns of use become consolidated into grammatical constructions. Constructions are the basic building blocks of language. Words and idioms are constructions, and so are intermediate sequences of words, mixed sequences of words and syntactic variables, and abstract patterns of words. Constructions are symbols that consist of a mix between syntax and semantics. Grammatical constructions "are nothing other than the patterns in which meaningful linguistic symbols are used in communication" (*Ibid*, p. 5).

According to Tomasello, linguistic symbols are human specific ways to communicate. As opposed to non-human animals, whose communicative exchanges consist in manipulations of other's behavior and emotional states, human communication consists in manipulating the attentional states—i.e., the mental state a person is in when paying attention to an object—of other persons. Emergence of symbols is a phylogenetic process; emergence of grammar is a cultural-historical affair. Hence, the process of language acquisition is a cultural issue, and the mechanisms that bring about this acquisition are use-driven.

The central tenet of usage-based theories of language implies that language structure is learned and hence not innate. These two claims, namely that language structure depends on its function and that it can be learned, have as a consequence that no principled distinction can be made between linguistic core and periphery, as Chomskyan linguists stipulate. Accordingly, usage-based theories of language should abide by the claim that the mechanisms and evidence available to the child in her language acquisition process are enough to learn all there is to be learned about structure—i.e. adult linguistic competence. Part of the strategy is to come up with simpler descriptions of such an adult linguistic competence, and to claim that the same structure need not apply across different stages of language acquisition.

The notion of linguistic competence does not consist, as it did in Chomskyan linguistics, of a Universal grammar of generative rules. According to usage-based theories of language, linguistic competence consists of "the mastery of a more complex and diverse set of linguistic representations which includes the core, the periphery and many things in between" (*Ibid*, p. 6).

The Continuity Assumption from Chomskyan linguistics is not operative here; although any stage of linguistic competence must be described by appealing to structured inventories of constructions, such a structure need not be constant and somehow present across stages.

3.1.2 Human symbolic communication

Tomasello claims that animal communication consists in the use of signals as a way to manipulate other's behavior and motivational states. For example, the purpose of alert signals is to prompt evasive actions against predators. Such signals are not learned. As opposed to animal communication, human symbolic communication is an independent, human specific ability. Linguistic communication is a special form of human symbolic communication. The two main human specific characteristics of communication are its symbolic and its grammatical nature. The symbolic dimension of human communication is that symbols are aimed at the attentional states of others. The grammatical dimension establishes that symbols are used together in patterned ways, patterns that take on a meaning of their own.

The account of the symbolic dimension of human communication starts with a new kind of social cognition—'new' in the sense of species specific—, which likely evolved as a result of adaptation. This new kind of social cognition consists in the capacity human beings have to understand one another as intentional and mental agents, which then leads them to the attempt to manipulate other's intentional and mental states for various cooperative and competitive purposes.[5]

The manipulative aspect of symbols seems *prima facie* closely related to what Tomasello calls the intersubjective property of symbols, namely that everyone knows that everyone is potentially both a producer and a comprehender of those symbols. There are three fundamental characteristics to symbols (see *Ibid*, p. 12). First, symbols have the (only) purpose of directing the attentional state of others to outside entities. Second, such use is merely declarative, that is, simply to inform other persons of something with no expectation of an overt behavioral or motivational response. Third, the information transmitted through a symbol is fundamentally perpectival "in the sense that a person may refer to one and the same entity as *dog, animal, pet* or *pest*, or the same event as *running, fleeing, moving* or *surviving*—depending on her communicative goal with respect to the listener's attentional states" (*Idem*).

[5]A number of relevant quotes on this point are the following: "Intentional agents are animate beings who have goals and who make active choices among behavioral means for attaining those goals, including active choices about what to pay attention to in pursuit of them" (*Ibid*, p. 21). "[Intention reading behaviors] would seem to indicate an emerging understanding of other persons as intentional agents like the self whose psychological relations to outside entities may be followed into, directed, and shared" (*Idem*). "Sounds become language for young children when and only when they understand that the adult is making that sound with the intention that they attend to something. This requires an understanding of other persons as intentional agents who intend things toward one's own intentional states" (*Ibid*, p. 23). It might be important to notice that, even though the manipulation of the intentional and mental states of others can be made in order to pursue various cooperative and competitive purposes, Tomasello seems to assume that such a manipulation can be a purpose on its own, and that as such it is independent from these further purposes.

There are three main axis to the perspectival character of the information transmitted by symbols. They are the granularity-specificity (thing, furniture, chair, desk chair), the perspective (chase-flee, buy-sell, come-go, borrow-lend), and the function (father, lawyer, man, American; coast, shore, beach).[6]

Tomasello's notion of communication—which is basically a Gricean model of communication (see §1.3.2)—can be described in the following, schematic way. Agents A and B know that they both have mental states that attend to outside entities. Suppose that symbol S is shared between A and B, that is to say, that both A and B know that they are both producers and consumers of symbol S, and that they attribute it the same function—i.e., X's tokening of a linguistic symbol S has the purpose of directing Y's mental state to an outside entity E with a particular perspective. Thus, when A tokens symbol S, B knows that A intends for him to direct attention to E with the particular perspective mandated by symbol S. Accordingly, B changes his attentional state in the directed way.

This model of symbolic communication bears on the notion of language via the central tenet of usage-based theories of language, namely that grammar emerges from language-use. Indeed, the notion of language use is precisely the notion of symbolic communication.[7]

3.1.3 An account of language acquisition

One of the important consequences of this conceptualization of language is that it brings about a change both in the notion of linguistic competence and in what the appropriate stimulus is in language learning. These points are closely intertwined. The notion of linguistic competence does not consists of a core of abstract rules. It consists rather of a structured inventory of constructions. Hence, to explain language acquisition is to explain how children acquire such a structured inven-

[6]Tomasello speculates about the origins of such a perspectival character in the following way: "And because the people of a culture, as they move through historical time, evolve many and varied purposes for manipulating one another's attention (and because they need to do this in many different types of discourse situations), today's child is faced with a whole panoply of linguistic symbols and constructions that embody many different attentional construals of any given situation" (*Ibid*, p. 13). It is worth noting that an ambiguity resides in the previous explanation. One interpretation is that people of a culture have the purpose of manipulate one another's attention in many different types of discourse situations, and the other interpretation is that people of a culture want to manipulate one another's attention in different ways for different purposes—i.e. the ambiguity resides in whether the manipuation of attention is in and of itself the purpose, or rather if the manipuation of attention is the means to achieve an independent purpose. The argument seems to carry plausibility due to the latter interpretation, but Tomasello's model requires the former interpretation: communication is, at least conceptually, independent from the subsequent purposes (behaviors and motivational states) that can be achieved with communication.

[7]It seems that the notion of language-use is, therefore, separated from any further purpose related to the tokening of a linguistic symbol, such as getting someone to do something, etc.

tory.[8] Constructions are symbols, and to show how one acquires symbols one has to appeal to social-cognitive skills used in social exchanges. As a consequence, the stimuli relevant for language acquisition are not just bare grammatical expressions, but the full-blown linguistic and extra-linguistic components of the social exchange. Surely it must be possible to give an account of how the final stage of language acquisition was brought about by such an enriched stimulus, Tomasello claims. Children have at their disposal much more powerful learning mechanisms than simple association and blind induction: association and induction are integrated with other cognitive and social-cognitive skills.

The skills available to the child in the language acquisition process come in two breeds: intention reading and pattern finding abilities. The former are abilities which "are necessary for children to acquire the appropriate use of any and all linguistic symbols, including complex linguistic expressions and constructions" (*Ibid*, p. 3). According to Tomasello, not only are they unique to human beings, but they enable linguistic communication as well as a variety of other cultural skills and practices, such as tool use, pretend play, rituals, etc. *Intention reading* abilities are the following (*Idem*): (a) establishing shared attention; (b) following another person's attention and gesturing; (c) directing the attention of others by gesturing; and (d) learning the intentional actions of others. These abilities develop in normal cases after the first 9–12 months of age in human infants. The latter kind of skills are *Pattern finding* abilities, which are (*Ibid*, p. 4): (i) the ability to form perceptual and conceptual categories of objects and events; (ii) the ability to form sensory-motor schemas; (iii) the ability to perform statistically based distributional analyses on perceptual and behavioral sequences; and (iv) the ability to create analogies across two or more complex wholes, based on similar functional roles of some elements in these different wholes.[9]

In favor of this account of language and language acquisition Tomasello mentions, among several others, the following, interesting fact. A child's language starts to emerge around the end of her first year, which coincides with the development of these cognitive and social-cognitive skills. Moreover, there seems to be a high correlation between a high development of these skills and a high development of linguistic skills in 1-year-old children (i.e., high development relative to this very same population).[10]

[8]"If linguistic constructions are meaningful linguistic symbols in their own right, then children can use function or meaning to assist in their acquisition, just as they do in their acquisition of smaller linguistic constructions such as individual words" (*Ibid*, p. 6).

[9]A Chomskyan linguist will accept that the child has all these abilities. The important question to him is why they are relevant as far as language learning is concerned. The answer from usage-based theories of language is based on their quite different notion of language. For language is, according to usage-based theories, a structured inventory of constructions that consolidate patterns of use—in the sense of modifying other people's attentional states. Thus, language acquisition requires all these abilities that help modifying other people's attentional states.

[10]"In the current account, children begin to acquire language when they do because the

According to Tomasello's notion of language, the description of the language acquisition process starts with an account of early holophrases—i.e., one-unit utterances of unparsed adult expressions, such as *Lemme-see*—, it then moves on to an account of words, going through simple (multiple-word) constructions, and finally to more complex and abstract constructions.[11]

It is beyond the scope of the present work to give a detailed discussion of this process. For current purposes it is most relevant to carry out a closer scrutiny of the "early intention reading skills" that are at work in the acquisition of holophrases. For these skills, according to Tomasello, ground the child's "comprehension of the symbolic dimension of linguistic communication" (*Ibid*, p. 31). These are (i) joint attentional frames; (ii) understanding communicative intentions; and (iii) role reversal imitation.

A joint attentional frame is constituted by a child, a caretaker, an object, and an interaction between them. Joint attentional frames are underwritten by the ability to "interact triadically with other persons."[12] A joint attentional frame is a triadic relation in which the participants' attention is shared and directed to an object. The frame is situated in the sense that the attention to an object occurs when both participants are engaged in a joint activity with the object. This activity, and the goal to which it is directed, plays a fundamental role in the definition of the frame in the sense that, if the arguments of the triadic relation are the same but the activity different, the joint attentional frame is not the same. Tomasello calls this feature the *intentional definition of the frame*. Finally, such an activity requires different roles (e.g., diaper-changer and diaper-changee), and these roles, Tomasello claims, are understood by all the participants of the frame.

---

learning process depends crucially on the more fundamental skills of joint attention, intention-reading, and cultural learning—which emerge near the end of the first year of life. And importantly, a number of studies have found that children's earliest skills of joint attentional engagement with their mothers correlate highly with their earliest skills of language comprehension and production" (*Ibid*, p. 21).

[11] "Many accounts of early language development describe the process [of language acquisition] as one in which children first acquire words and then combine them, perhaps via rules, into sentences. This is basically a structural point of view, and it is aimed at languages like English, which are very isolating, not at languages like Inuktitut. From a more functional point of view, children are hearing and producing whole utterances, and their task is to break down an utterance into its constituent parts and so to understand what functional role is being played by each of those parts in the utterance as a whole" (*Ibid*, p. 40).

[12] "1-year-old's newfound ability to interact triadically with other persons enables them to participate in relatively extended bouts of social interaction mediated by an object in which both participants constantly monitor each other's attention both to the object and to themselves [...] the basic point is that joint attentional frames are defined intentionally, that is, they gain their identity and coherence from the child's and the adult's understanding of 'what we are doing' in terms of the goal-directed activities in which we are engaged [...] another crucial feature of joint attentional frames is that the child understands both the adult's and her own roles in the interaction from the same 'outside' perspective—so that they are all in a common representational format" (*Ibid*, pp. 21f).

As for communicative intentions, Tomasello adapts a Gricean notion of communicative intention. In the latter framework, there are informative intentions—i.e., the intention that an audience entertains a certain proposition—, and there are communicative intentions—i.e., the intention that an informative intention be recognized. This seems to fit in well with Tomasello's claim that "communicative intentions are a special type of intention in which an individual intends something not just toward an inert object but toward the intention[al] states of someone else" (*Ibid*, p. 23). A communicative intention seems to fulfill two different roles: that of intention as directedness or aboutness, and that of intention as purposeful or goal-oriented attitude. Such a Janus-faced property of communicative intentions make them fit to describe the mental states of the participants of a joint attentional frame. This is why Tomasello claims that "[c]hildren understand adult communicative intentions, including those expressed in linguistic utterances, most readily inside the common ground established by joint attentional frames" (*Ibid*, p. 23).

The third intention-reading skill is that of role reversal imitation. It might be considered as a particular form of imitation in which the child learns to use a symbol towards the caretaker in the same way in which the caretaker used the symbol towards the child.[13]

What role do these skills play in the early stages of language acquisition? Tomasello gives a detailed description of this role for the case of the child's acquisition of gestures and early holophrases. To begin with gestures, there are three main types of gestures: ritualizations, deictic gestures, and symbolic gestures; and there are two main processes by means of which a child learns these gestures, which we shall see in a moment.

A ritualization is an "effective procedure for getting something done" (*Ibid*, p. 32), such as the child's raising her arms to be picked up. Ritualizations are acquired by operant conditioning, which exemplifies the first learning process. The child simply recognizes that by producing a particular gesture she obtains a particular result. This learning process "is essentially the one by which nonhuman primates learn their gestures (Tomasello, 1996). [But since] it does not involve understanding communicative intentions or cultural (imitative) learning of any sort, it does not create a shared communicative symbol" (*Ibid*, p. 32). None of the three intention reading abilities are necessarily at work here.

[13] "To learn to use a communicative symbol in a conventionally appropriate manner, the child must engage in role reversal imitation: she must learn to use a symbol toward the adult in the same way the adult used it toward her. This is clearly a process of imitative learning in which the child aligns herself with the adult in terms of both the goal and the means for attaining the goal; it is just that in this case the child must not only substitute herself for the adult as actor (which occurs in all types of cultural learning) but also substitute the adult for herself as the target of the intentional act (that is, she must substitute the adult's intentional state as goal for her own attentional state as goal). The result of this process of role reversal imitation is a linguistic symbol: a communicative device understood intersubjectively from both sides of the interaction." (*Ibid*, p. 27).

Deictic gestures, moreover, are used to direct the caretaker's attention to entities. The clearest examples of deictic gestures are showing—e.g., when the child holds up an object to the adult—, and pointing. At this stage, it is possible for the child to use these deictic gestures while at the same time she still does not understand other people's deictic gestures. Such a situation might occur when pointing is learned as a ritualization—e.g., the child points as a means of orienting her own attention, but this gesture is followed up by the caretaker's excitement and thus the child associates pointing with sharing excitement with the caretaker (*Ibid*, p. 34). This means that the ability to understand communicative intentions is not yet developed or utilized. Tomasello claims that a deictic gesture becomes symbolic to some extent when the child only uses the gesture to simply share attention with the adult.[14]

The third kind of infant gesture is that of symbolic gestures. "These are communicative acts that are associated with a referent either metonymically or iconically. Examples include sniffing for a flower, panting for a dog, holding arms out for an airplane, raising arms for big things, and blowing for hot things" (*Idem*). Some of these gestures are learned by association, just as ritualizations, but they are usually learned by role reversal imitation. These are, according to Tomasello, full-fledged symbols, although they do not seem to require a joint attentional frame, since a child can be panting in the presence of her caretaker to symbolize a dog without there actually being a dog around. However, they do require the ability to understand communicative intentions.

Now, as for holophrases, they are one-unit utterances of unparsed adult expressions—i.e., "such expressions as *I-wanna-do-it, Lemme-see,* and *Where-the-bottle*" (*Ibid*, p. 38). Holophrases, "are entire semantic-pragmatic packages [...] that express a single relatively coherent, yet undifferentiated, communicative intention" (*Ibid*, p. 39). These communicative intentions are "most often the same [...] as that of the adult expressions from which they were learned" (*Ibid*, p. 36). Children use these holophrases to achieve particular goals.[15] Tomasello gives a number of examples of holophrases used by his daughter, some of which are the following (adapted from *Ibid*, p. 37): *Play-play*: First used as an accompaniment to her âĂIJplayingâĂİ the piano, then to name the piano; *Mess*: First used for the result of knocking down blocks, then when she wanted to knock them down; *Make*: First used in block play to request that a structure be built, usually so that she could knock it down (and make a "mess"). Holophrases occur inside joint at-

[14]"It is also of crucial theoretical significance that human infants point for others not just for imperative motives—to get help with something—but also for declarative motives such as simply wishing to share attention with them" (*Ibid*, p. 34).

[15]These goals include: "to (a) request or indicate the existence of objects; (b) request or describe the recurrence of objects or events; (c) request or describe dynamic events involving objects; (d) request or describe the actions of people; (e) comment on the location of objects and people; (f) ask some basic questions; (g) attribute property to an object; (h) use performatives to mark specific social events and situations" (*Ibid*, p. 37).

tentional frames and require the ability to understand communicative intentions. Hence, Tomasello claims that the child's learning holophrases can be explained by role reversal imitation.

Intention reading abilities are not enough to explain how children learn more complex expressions, but pattern recognition abilities come to the rescue. A detailed discussion of how Tomasello explains the learning process relevant for these complex expressions is beyond the scope of this dissertation. A few words should suffice to give an idea of the gist of this process. The child utilizes her pattern recognition abilities to segment both expressions and their communicative intentions in order to match the components of the former with the components of the latter. In this way, according to Tomasello, the child is able to extract productive linguistic elements.[16]

3.1.4 Remarks on Tomasello's insights

There is much to commend in Tomasello's account of language. I will review first what I think are the pros of such account—with a little touch of my personal understanding on the matters—, and then make a short discussion of what I think are its cons.

Pros

To begin with the pros, I believe that one of the biggest contributions of Tomasello's usage-based approach, and in general the growing literature on usage-based theories of language, is that they make semanticists aware that linguistics is not necessarily Chomskyan linguistics. That is, there are alternative ways in which an empirical study of language can be setup and alternative ways in which the relevant questions of significance can be answered, different from accepting Chomsky's far-reaching commitments.

One of the main points of rupture with Chomsky's commitments, point which we must wholeheartedly embrace, is that linguistic competence is not tacit knowledge (or cognizance) of rules, but rather it arises from a cluster of cognitive and social-cognitive abilities that underwrite language comprehension and production. Moreover, the account of such abilities, given that language is a socio-cultural affair, cannot be given only in biological or evolutionary terms (more on these abilities later on).

Tomasello's approach makes it clear that linguistic competence need not be rule-based and uniform across a linguistic community (ranging from infants of

[16] "[T]here is a different syntactic work to do if the child is to extract productive linguistic elements that can be used appropriately in other utterances, in other linguistic context, in the future. For this the child must engage in a process of segmentation, with regard not only to the speech stream but also to the communicative intentions involved—so as to determine which components of the speech stream go with which components of the underlying communicative intention" (*Ibid*, p. 38).

several stages of development to competent adults). Consequently, it suggests that it is imperative that our models of human communication must take into account a disparity in the underlying grammatical competences of the participants of the linguistic exchange. This is a straightforward consequence from the conception of communication as recognition of communicative intentions and the rejection of the Continuity Assumption. For it is claimed that children's linguistic competence is constituted by an unstructured set of constructions, unlike adult's linguistic competence; it is also claimed that children are able to understand communicative intentions codified in complex constructions as spoken by adult speakers and, reciprocally, children's holophrases convey the same communicative intentions as adult's expressions.[17] Hence, linguistic communication, in particular adult-child linguistic communication, is successful despite the uneven linguistic competences of the participants.

Moreover, if we do not accept the Continuity Assumption, we need not accept either that all competent speakers of a community possess the same set of constructions. As a corollary, the notion of language as a set of sentences starts to lose its ground; for, given that there need not be a designated set of constructions, among the sets of constructions that constitute the linguistic competences of the speakers of a community, that represents the language of such community, then there is no unique set of 'well-formed' sentences generated from a unique set of constructions.[18] Hence, language, being a socio-cultural affair, might well be said to consists of an open-ended collection of signs that are used in patterned ways.[19] In Tomasello's words:

> Language, or better linguistic communication, is thus not any kind of object, formal or otherwise; rather it is a form of social action constituted by social conventions for achieving social ends, premised on at least some shared understanding and shared purposes among users (Tomasello, 2008, p. 343).

[17]Compare: "[C]hildren's early one-word utterances may be thought of as 'holophrases' that convey a holistic, undifferentiated communicative intention, most often the same communicative intention as that of the adult expressions from which they were learned" (*Ibid*, p. 36).

[18]The last step in this line of argument relies on the claim that these uneven sets of constructions generate different sets of well-formed sentences; which is perfectly acceptable because of the following observations: (a) among these sets of constructions there must be those sets that represent children's 'ill-formed' sentences; and (b) competent adults' sets of constructions do not generate the same set of sentences (unless stipulated by fiat with an idealized notion of competence).

[19]By an *open-ended collection* I mean that no totality of things is recognized, which must either belong or not (or belong to a certain degree) to such a collection. That is, the actual extension of an open-ended collection is not a relevant matter. By *patterned ways* to use signs I mean that signs appear usually along with other signs, and that patterns of use can be discerned in a statistical fashion in a corpus of data; but there need not be any commitment as to the actual existence of these statistical patterns in the mind/brain of the speakers whose speech/writing belongs to such corpus.

Another prominent feature of this approach is that a language-user is considered as a goal-oriented agent all the way down, that is, the goal-orientedness is, as it were, built-in in the analysis of semantic competence and semantic interpretation (although Tomasello's approach makes room for a distinction between semantic competence and pragmatic competence, see fn. 20 below). Moreover, the social-cognitive skills, which participate in semantic competence, are given a detailed description and are well structured. Above all, it is particularly interesting that Tomasello understands joint attentional frames as the locus of language-use, and gives pride of place to their intentional definition.

Finally, Tomasello gives a detailed presentation of what he calls pattern finding abilities and gives a detailed account of their role in the process of language learning, the description of which is rife with empirical data.

Cons

Now, there are a number of aspects from Tomasello's approach that do not fit in with my requirement of preserving our descriptions of our uses of signs in general, and language in particular, in everyday life, to which I now turn.

First of all, our attention should be put on the notion of a symbol (see fn. 5 for quotes on Tomasello's notion of a symbol; compare also the three fundamental characteristics of symbols (Tomasello, 2003, p. 12)). Tomasello suggests that a symbol, as such, can be used with the only purpose of directing someone's mental state to outside entities with a particular perspective. Closely related to this point is the conception of what language-use amounts to. To use language, according to Tomasello, consists in directing X's mental state to an outside entity E with a particular perspective. This is the so-called human-specific characteristic of symbolic communication.[20]

But if we wish to preserve our descriptions of our uses of signs in everyday life, Tomasello's definition can only be taken as a starting point of a more encompassing notion of a symbol. In fact, there are reasons to think that Tomasello had in mind an even broader notion of a symbol than his attempt at a definition will have captured. For instance, take the case of symbolic gestures, such as sniffing for a flower, panting for a dog, etc. (*Ibid*, p. 34). These examples suggest a richer notion of a symbol in two senses. Firstly, there need not be a *shared* referent of

[20]It is not relevant for our purposes whether the outside entity E is present or not at the moment of the use of the symbol, although it is interesting to note that it has been suggested that only humans, and no other primate, can use symbols to refer to absent entities (see Liszkowski et al., 2009). And it is not relevant because the ensuing broadening of the notion of a symbol goes well beyond reference to an entity, absent or not (see further below in the text).

It seems, therefore that, if we take at face value such definition of a symbol, whatever other use language is put to, it is either not symbolic or derived from symbolic communication. This in turn suggests that a distinction can be made between semantic competence—i.e., the ability to use signs to direct someone's mental state to outside entities with a particular perspective—and pragmatic competence—i.e., the ability to use signs in other ways.

a symbolic gesture. For instance, if the symbolic gesture is panting for a dog, "a dog" is unspecific, that is, it could be just any dog or no specific dog that the gesture-maker has in mind. Or in any case what dog the gesture-maker has in mind need not be the same than the dog the addressee has in mind. This need not imply that the symbolic gesture was not successful. For, secondly, the symbolic gesture might well be produced to prompt a range of emotions or to obtain an emotive response. If the child sniffs for a flower, she might well just want to evoke again in herself and her mother the nice feeling from earlier in the afternoon when they were playing together in their fresh smelling yard. This need not require for mother and child to share attention on a specific flower (either present or not), nor is the gesture less of a symbolic nature for that matter. The point is clearer in the case of holophrases. They are "entire semantic-pragmatic packages [...] that express a single relatively coherent, yet undifferentiated, communicative intention" (*Ibid*, p. 39). Yet, the goals that a child intends to achieve with holophrases include to request an action, describe the actions of people, ask some basic questions, and use performatives to mark specific social events and situations (*Ibid*, p. 37; see also fn. 15), which suggest that a broader notion of a symbol fits in better with Tomasello's own descriptions of empirical phenomena. For these holophrases are full-blown symbols, and yet what they achieve goes beyond, and is categorically different from, sharing attention to an outside entity with a particular perspective.

What is more, the notion of a symbol must be broad enough to cover cases such as the following: (a) expressions that are used to prompt emotions and affections such as "Hi, good looking!," "Don't be affraid," "Well done!," etc.; (b) adverbs that elicit emotive qualifications over actions and that serve specific purposes in a conversation such as "definitely," "apparently," "amazingly," "indisputably," etc.; (c) expressions that refer to 'symbolic kinds' such as "tax," "salary," "government," "meeting," "hearing," "agreement," "signature," "championship," etc.; and, of course, (d) mathematical and other expressions that have systematic roles in a wider framework and do not have any specific referential purpose.

The previous remarks extend to the notion of a joint-attentional frame. Such frames are defined as requiring that their participants act on an external entity. However, there are joint actions of the participants that involve no external entities—e.g., chitchatting, flirting, solving a mathematical problem, giving directions, etc.; and, furthermore, there are joint attentional frames that do not require joint actions.

Moreover, Tomasello claims that a symbolic gesture is learned through role reversal imitation, which is required for the so-called intersubjective property of symbols—i.e., that everyone knows that everyone is potentially both a producer and a comprehender of those symbols. Note, to begin with, that this property makes part of a *theory* about symbols, not part of a *description* of an empirical phenomena. Now, to claim that symbols have the intersubjective property, described as above, and that symbols are therefore learned from role-reversal im-

itation, has far reaching consequences. If a child is to learn the term, say "car" from role reversal imitation, this implies that she understands the perspective under which the adult conceives a car when addressing the child. But why is this so? Has not the adult quite a richer conception of what a car is than the child does? How about terms such as "justice," "liberty," "god," etc. about which it is hard to share a perspective? More generally, it seems to me that the intersubjective property of symbols is in conflict with incomplete understanding. Given the paramount role that the notion of incomplete understanding plays in my approach, Tomasello's appeal to such property underlies a substantial disagreement with the descriptions of language-use that constitute the starting point of the present inquiry.

3.2 Brandom's methodological phenomenalism

3.2.1 Inferentialism and commitments

Brandom starts out his *Making it explicit* with the sentence " 'We' is said in many ways" (1994, p. 3). He is interested in a principled (i.e., philosophical) way to explain what defines us, as human beings, and asks "What would have to be true—not only of the quaint folk across the river, but of chimpanzees, dolphins, gaseous extraterrestrials, or digital computers (things in many ways quite different from the rest of us)—for them nonetheless to be correctly counted among us?" (*Ibid*, p. 4). Brandom presupposes that what demarcates us, as human beings, is that we can attribute intentional states to each other and that these intentional states have contents that are *about* something (see *Ibid*, pp. 67f).

Brandom sees a dominant trend in Western philosophy of mind and language according to which the content (the 'aboutness') of both mental states and sentences must be conceived as representational.[21] Thus arises the so-called "problem of intentionality," namely, how a representing stands for something represented.[22]

One of Brandom's qualms with representationalism—i.e., the conception of content as representational—is the tendency to conceive of the representational relation—i.e., the relation between representing and represented—either as primitive or as based on a relation of designation, which in turn is conceived as primitive. The gist of Brandom's discontent is that neither the representational relation nor the designation one is adequate to play the role of 'unexplained explainer'

[21] "The master concept of Enlightenment epistemology and semantics, at least since Descartes, was *representation*. Awareness was understood in representational terms—whether taking the form of direct awareness of representing or of indirect awareness of represented via representations of them" (Brandom, 2001, p. 7).

[22] "The problem of intentionality," in Stalnaker's words, "is a problem about the nature of representation. Some things in the world—for example pictures, names, maps, utterances, certain mental states—represent or stand for, or are about other things—for example, people, towns, states of affairs" (quoted in Brandom, 1994, p. 69).

(see *Ibid*, pp. 69ff). He argues that nothing is a representing of something that is represented unless in virtue of a subject that treats the representing as the represented.[23] There is no content, he claims, either of mental states or sentences, without a content-bestowing activity, and that such an activity must "be seen not as a kind of passive reflection but as a kind of active revelation" (Brandom 2001, p. 8; see also Brandom 1994, pp. 146ff).

However, the idea that content exists only in virtue of a content-bestowing activity, as such, does not entail parting ways with representationalism. After all, such a content-bestowing activity could be, as it were, a sort of 'representational' activity. But for Brandom, to treat a representing as something represented means to treat *in practice* a representing as something represented. This idea leads Brandom to posit an intrinsic connection between know-what and know-how in the sense that an account of the former should be given in terms of, or should be reduced to, an account of the latter.[24] In other words, knowledge that such-and-such is the case must be explained in terms of, or be reduced to, practical knowledge. However, Brandom claims that not any kind of practical knowledge will do. For he cashes out the concept of practical-knowledge-that-bestows-content in a very specific way. To him, the way in which representings stand for something represented is to be understood in terms of practical knowledge of inferential relations among representings.[25]

What characterizes the conceptual as opposed to the non-conceptual realm, according to Brandom, is not the representational character of a passive mind, but rather the inferential articulation of the doings and sayings of the participants of a particular practice.[26] The species specific cognitive ability that we humans have is our demand and consumption of reasons. That is to say, an event in the world is an action, and not a mere behavior, only in virtue of its being performed for a reason; and a reliable discriminatory ability is a perceptual response only

[23]See (Brandom, 1994, pp. 72ff). Compare also how Peregrin (2008) illustrates this thought: "[I]magine that we literally take a label with a string of letters and stick it on an object, say on a car. Does it mean that we have given a name to the car? Not really: it may count simply as a decoration of the car, or as an indication of the owner of the car, etc. What accounts for the difference between taking the string on the label as a name and taking it as something else? Well, it seems that it is the habits and social practices of the community in question: if sticking names on cars is something usual, then it is likely to be taken as a name and [hence to] be a name; in other cases it may not" (Peregrin, 2008, p. 36).

[24]Brandom's intention is to provide "an account of knowing (or believing, or saying) *that* such and such is the case in terms of knowing *how* (being able) to *do* something. It approaches the contents of conceptually *explicit* propositions or principles from the direction of what is *implicit* in practices of using expressions and acquiring and deploying beliefs" (Brandom, 2001, p. 4).

[25]"[I]t is the practical inferential proprieties acknowledged by such attitudes [of treating an inference as correct or incorrect] that make noises and marks mean what they mean" (Brandom, 1994, p. 174).

[26]"The master idea that animates and orients this enterprise is that what distinguishes specifically *discursive* practices from the doings of non-concept-using creatures is their *inferential* articulation. To talk about concepts is to talk about roles in reasoning" (Brandom, 2001, p. 10).

in virtue of its providing reasons.[27] In other words, perceptions provide reasons, actions stand in need for reasons, and assertions both give and ask for reasons.[28]

Thus, the gist of Brandom's philosophy of mind and language is the reconstruction of "autonomous discursive practices" (Brandom, 2008, p. 117).[29] Participation in such practices is what underwrites that its participants' utterances and mental states are contentful; autonomous discursive practices bestow content on both sentences and mental states.

I will not be interested here in Brandom's technical analysis of such practices, but in the presuppositions of why these practices achieve what they are supposed to achieve.

Brandom's explanatory strategy consists in explaining simultaneously both the content of expressions and the content of mental states.[30] Inferential relations come to the rescue in order to play a Janus-faced role: they underwrite both the account of semantics and the account of conceptual understanding.

On the semantic side, the notion of the semantic content of a proposition is defined in terms of its specific inferential articulation (see, for instance, Brandom, 1994, pp. 113ff). This inferential articulation has three important characteristics. First, it is *not* derived from 'representational' semantic concepts, such as reference or truth—on the contrary, Brandom wants to reduce reference and truth to this inferential articulation. Second, such an articulation is based on material

[27]"The judgments that are our perceptual responses to what is going on around us differ from responses that are not propositionally contentful (and so are not in that sense intelligible) in that they can serve as reasons, as premises from which further conclusions can be drawn. Actions, which alter what is going on around us in response to propositionally contentful intentions, differ from performances that are merely behavior (and so not intelligible in terms of the propositionally contentful intentions that elicit them) in that reasons can be given for them; they can appear as the conclusions of practical inferences" (Brandom, 1994, p. 11).

[28]The double role of assertions, namely, that they give and ask for reasons, leads Brandom to suggest that assertions have pride of place among speech acts. This prominent place comes down to the idea that the content of assertions must be explained first, so that the content of other speech acts can be made sense of in relation to the content of assertions. Assertion has played a prominent role in philosophy of language, because of its purported role both in the expression of cognitive attitudes and in the definition of linguistic meaning (Pagin, 2008a), and nowadays there is a good deal of discussion about the very notion of an assertion (Brown and Cappelen, 2010; Williamson, 2000). However, I will not delve into the adequacy of Brandom's definition of assertion, or on his assumption of explanatory primacy over other speech acts.

[29]On the issue of the autonomy of discursive practices, compare: "[T]he inferential identification of the conceptual claims that language (discursive practice) has a *center*; it is not a motley. Inferential practices of producing and consuming *reasons* are *downtown* in the region of linguistic practices. Suburban linguistic practices utilize and depend on the conceptual contents forged in the game of giving and asking for reasons, are parasitic on it" (Brandom, 2001, p. 14).

[30]"[A] *relational* expressivism will understand linguistic performances and the intentional states they express each as essential elements in a whole that is intelligible only in terms of their relation. According to such an approach, for instance, one ought not to think that one can understand either believing or asserting except by abstracting from their role in the process of asserting what one believes" (Brandom, 2001, p. 9).

inferences, that is, the validity of such inferences involves the content of sentences and not their form.[31] And third, this articulation is understood in a normative way.[32]

Strictly speaking, what enters into inferential articulation is not the sentence *qua* syntactic entity, but rather its concomitant doxastic commitment. "Doxastic commitments are essentially a kind of deontic status for which the question of *entitlement* can arise" (Brandom, 1994, p. 142, emphasis in the original). There are several kinds of commitments, among them discursive, perceptual, practical, and inferential. For instance, my deontic status can be described as my being committed to the discursive commitment that "I own this computer in front of me"; to the perceptual commitment that there is a computer in front of me; to the practical commitment that I treat my computer with care; and to the inferential commitment that if my computer breaks down, I have someone repair it.

A person's deontic status can be conceived as the set of her commitments,[33] which in turn can be conceived as the coordinates that define her place in the spacial-temporal-social universe that she lives in. This universe is determined by the way in which commitments are related to other commitments; these relations are what underwrites the content that an autonomous discursive practice bestows on sentences and mental states simultaneously. It is worth noting that the notion of the content of a commitment is a holistic notion, which means that the content of a particular commitment depends on the content of other commitments. Brandom gives no algorithmic recipe to determine the full content of a commitment, or to reduce it to other notions; it seems that the universe of commitments is taken as a primitive, irreducible notion.

3.2.2 Methodological phenomenalism and incomplete understanding

On the conceptual side, to fully understand a commitment (a sentence, a perception, an action) is to grasp its *correct* inferential connections with other commitments in the spacial-temporal-social universe. Furthermore, to grasp inferential connections is a 'kind of know-how', a sort of mastery of the game of giving and asking for reasons.[34] This practical aspect of understanding, as well as its norma-

[31] See Brandom (1994, pp. 102ff). For a brief discussion of the relevance of the material aspect of inferences as regards the three-fold structure of the inferential articualtion of semantic content see Andrade-Lotero and Dutilh-Novaes (pear).

[32] "Content is understood in terms of proprieties [in the sense of correctness] of inference, and those are understood in terms of the norm-instituting attitudes of taking or treating moves as appropriate or inappropriate in practice" (Brandom, 1994, p. 134).

[33] This set is different from the set of the commitments self-attributed or attributed to someone else, see below.

[34] "Grasping [a] concept [...] is mastering its *inferential* use: knowing (in the practical sense of being able to distinguish, a kind of know *how*) what else one would be committing oneself to by applying the concept, what would entitle one to do so, and what would preclude such

tive aspect, as we shall see in a moment, seem to allow for a notion of incomplete understanding. Compare:

> Understanding or grasping a propositional content is here presented not as the turning on of a Cartesian light, but as practical mastery of a certain kind of inferentially articulated doing: responding differentially according to the circumstances of proper application of a concept, and distinguishing the proper inferential consequences of such application. This is not an all-or-none affair; the metallurgist understands the concept *tellurium* better than I do, for training has made her master of the inferential intricacies of its employment in a way that I can only crudely approximate. Thinking clearly is on this inferentialist rendering a matter of knowing what one is committing oneself to by a certain claim, and what would entitle one to that commitment" (Brandom, 2001, pp. 63f).

I read Brandom in a way that makes room for the idea that our abilities are always limited.[35] The agent's limited abilities are represented in terms of the limited amount of commitments that she can consider (by attributing them to another or to herself) at any time, and by the limited amount of inferential connections that she has a good command of. That our abilities are limited comes together with another aspect of understanding, namely, its normative aspect—i.e., the correctness of inferential relations. For the fact that such abilities are limited should be assessed against a measuring-rod, i.e., a point of comparison that allows us to show that such abilities are limited.

Brandom assumes that there is a distinction between concepts and our conception*s* of them (note the plural). Such a distinction must be understood as a gap between how we actually apply a concept and how it ought to be applied. Since to fully understand a concept, according to Brandom, is to grasp its correct inferential connections, this gap comes down to the difference between grasping inferential connections and grasping all and only the correct inferential connections of a concept. Compare:

> [This approach] distinguishes the proprieties governing correct use in which the concepts grasped by individuals consist, on the one hand, from the

entitlement" (Brandom, 2001, p. 11).

[35]"Practitioners are not in general omniscient about the commitments implicit in their own concepts [...] One can (according to an interpreter or scorekeeper) have bound oneself by one's practice, in part because of the things one was actually dealing with, in such a way that using a particular word is correct in one circumstance and incorrect in another—even when the individual so bound cannot tell the situations apart" (Brandom, 1994, p. 332). See also: "[O]ur practice puts us in touch with facts and the concepts that articulate them—we grasp them. But what we grasp by our practice extends beyond the part we have immediate contact with (its handles, as it were); that is why what we grasp is not transparent to us, why we can be wrong even about its individuation. How the world really is determines what we have gotten a hold of; but even though for that reason we do not know all the details about it, we still genuinely grasp *it*" (Brandom, 1994, p. 632, emphasis in the original).

> dispositions to apply concepts, make inferences, and perform speech acts, in which an individual's grasping of a concept consists, on the other—and so distinguishes concepts from conceptions of them (Brandom, 1994, p. 635).

Brandom presents a so-called perspectival account of concepts, also known as *methodological phenomenalism*, which is intended to accommodate the gap between actual dispositions to draw inferences and the inferential connections that ought to be drawn.[36] This account comes about via two interrelated tenets. The first tenet is that the idea that the content of an expression is about an objective "world of facts,"[37] as such, depends on the "sense of appropriateness" that comes with the application of the expression's content. By "sense of appropriateness" Brandom means the conviction that the application of an expression's content is correct or incorrect depending on how the "world of facts" actually is.[38]

The second tenet starts from the assumption that "[i]t makes no sense to specify or express a propositional or other conceptual content except from some point of view" (Brandom, 1994, p. 594), and combines it with the assumption that every perspective of application of a concept must *always* distinguish between what is *taken to be* correct from what is correct (*Ibid*, p. 593).

Methodological phenomenalism entails that there can be no privileged perspective of application of a concept, because from such a perspective no distinction could be made between what is taken to be correct and what is correct. As a consequence, there is no perspective from which it can be established that a concept has been correctly applied—although this should not entail that the concept has not been correctly applied.

It is worth noting that Brandom's methodological phenomenalism seems to imply incomplete understanding across the board. For the claim that there is no privileged perspective of application of any concept entails that, for any concept, there is no complete grasp of all and only the inferential relations the correctness of which determines the content of the concept.

At this point the question arises how Brandom accounts for concepts and our relationship with them. For if our conception of a concept reduces to a sort of practical ability to make inferences between commitments, and if our conception of a concept is different from the concept as such—which reduces to a place in the

[36]Brandom uses different terms to refer to this account. For instance, "methodological phenomenalism," "normative phenomenalism," "tactile Fregeanism," "I-Thou model of application of concepts." I will only use the first terminology.

[37]It is worth noting that for Brandom, the "world of facts" does not only comprise empirical facts, but also normative facts. This notion of world depends on the idea that "facts are just true claims (in the sense of what is claim*ed*, not the clam*ing* of it)" (Brandom, 1994, p. 625).

[38]"Part of what it is for our concepts to be *about* an objective world is that there is an *objective* sense of correctness that governs their application—a sense of appropriateness that answers to the objects to which they are applied and to the world of facts comprising those objects" (Brandom, 1994, p. 594).

spatial-temporal-social universe of normative relations between commitments—how can such practical ability, which 'lives' in a non-normative universe, touch the normative universe that confers content to concepts and sentences? Brandom believes that the social-perspectival character of methodological phenomenalism underwrites the normative aspect of conceptual and semantic content.

3.2.3 The social-perspectival character of concepts

Content is defined in terms of inferential connections between commitments. In turn, a commitment is, as it were, a normative creature with physical manifestations, such as sentence-tokens, perceptions, and actions, according to the kind of commitment they are manifestations of. These manifestations give rise to commitments in virtue of the *propriety*—i.e., correctness—of their connections with other manifestations. What deontic status a person is in is conceived as the set of her commitments, which is different from the set of commitments that are attributed to her by another person, or even by herself. But a fundamental aspect of Brandom's philosophy is his contention that such deontic statuses are grounded in people's attributions of commitments to one another—and hence that practical inferential abilities give rise to the normative universe of commitments.

There are two key elements in such account of normativity. One key element is the distinction between *acknowledged* and *undertaken* commitments (see Brandom, 1994, p. 197). The former are those commitments the agent explicitly avows as well as the commitments that she 'knows-how' they inferentially follow from the first ones. The latter are those commitments that, according to another agent, she ought to acknowledge, which include commitments that she might well have not acknowledged.

Another key element is that the inferential articulation of commitments is sensitive to collateral commitments: what commitments follow from an avowed commitment depends on what collateral commitments the avower undertakes.[39] To make this last point clearer, we can distinguish between two kinds of 'inferential significance': the *perspective-relative significance*, and the *perspective-independent significance* of a particular commitment p (*Ibid*, p. 635). Let Φ be a set of commitments—which we shall call a *perspective*. The perspective-relative significance of p with respect to Φ is the pair $\langle \Gamma_\Phi, \Delta_\Phi \rangle$, where Γ_Φ is the set of commitments from which p can be inferred utilizing as assumptions the commitments in Φ, and where Δ_Φ is the set of commitments that are inferential consequences of p utilizing as assumptions the commitments in Φ. The perspective-independent significance of p is the function that for each Φ returns the perspective-relative significance of p with respect to Φ.

[39] "[T]he inferential significance of a claim (what its consequences are and what would count as evidence for it) depends on what auxiliary hypotheses are available to serve as collateral premises." (Brandom, 1994, p. 475).

When a commitment p is avowed by an agent B, the interpretation of the content of this avowal, from another agent's perspective, say A's perspective, consists in the perspective-relative significance of p with respect to the set of commitments that A attributes to B. Note that it could be the case that B acknowledges a set of commitments Φ_1 that is different from the set of commitments Φ_2 that B undertakes (according to A). Furthermore, the perspective-relative significance of a commitment p with respect to Φ_1 might well be different from the perspective-relative significance of p with respect to Φ_2—i.e., $\langle \Gamma_{\Phi_1}, \Delta_{\Phi_1} \rangle \neq \langle \Gamma_{\Phi_2}, \Delta_{\Phi_2} \rangle$. Hence, if B avows p, the interpretation of the content of this avowal might result in a different perspective-relative significance for B than it does for A.[40]

The inferential articulation that Brandom takes to define conceptual content is the perspective-independent significance, which requires, as Brandom puts it, the ability to move from perspective to perspective.[41] That this definition of conceptual content depends on the ability to move from perspective to perspective is what determines the social-perspectival character of conceptual content. That is to say, it is because the definition of the perspective-independent significance requires a prior definition of different perspective-relative significances that Brandom claims that the consideration of various perspectives is essential to conceptual content—whence the 'social' in the social-perspectival character of concepts.

Before I move on to some remarks on Brandom's approach, I shall try to explicate a bit further his account of concepts. I shall go about doing this by means of an analogy with vision. Though analogies with vision are, in my view, by and large misguiding as regards meaning and understanding, it might be worth trying to explain Brandom's social-perspectival approach to concepts by means of the following analogy. It is not difficult to see that, given a point, F, and a plane, P, any three dimensional object, X, determines a unique projection into the plane P with focus F.[42] The projection is, as it were, a photo of X. Let us conceive of F and P as a 'perspective' from which X is seen. Clearly, as far as perception is concerned, an object is always perceived from a perspective; there is no perceiving an object but from a perspective. Furthermore, since an object determines its projection into each and every perspective, in a sense, the object can be characterized by the collection of its projections into each and every perspective.

[40]Thus, communication is threatened if it is defined as the transmission of the same perspective-relative significance. For discussion, see Brandom (1994, pp. 473ff); Scharp (2003); Penco (2008).

[41]"[G]rasp of a concept [...] requires that one be hooked up to the function that takes as its argument repertoires of concomitant commitments available as auxiliary hypotheses and yields inferential significances as its values. Carrying on a conversation involves being able to move from perspective to perspective, appreciating the significance a remark would have for various interlocutors" (Brandom, 1994, p. 635).

[42]The plane P determines, as it were, the angle of the projection, and the distance between the point F and the plane P determines the size of the projection.

Now, a perspective, as far as Brandom's approach is concerned, is conceived as a set of commitments, Φ. The projection of a particular commitment, p, is the perspective-relative significance of p with respect to Φ. In just the same way as there is no perceiving and object but from a perspective, there is no grasping a commitment but from a perspective (i.e., the perspective-relative significance with respect to Φ). Insofar as each and every projection is determined by the conceptual content of p, such content can be characterized by the collection of its projections into each and every perspective (i.e., its perspective-independent significance).

This analogy is illuminating because we can make sense of why Brandom claims that moving from perspective to perspective is essential to mastering concepts; why some perspectives can be more 'privileged' than others (such as the metallurgist's and the layman's as regards the concept tellurium); and why there is a principled distinction between the concept as such and a conception of it. Indeed, in the visual analogy, moving from perspective to perspective amounts to getting to know an object by moving around it and thus seeing it from every perspective; likewise, in Brandom's approach, moving from perspective to perspective amounts to grasping a concept by grasping its inferential connections with respect to every set of commitments. Moreover, in the visual analogy, there are more privileged perspectives to seeing an object than others, such as a clear vision with white light; likewise, in Brandom's approach, there are 'perspectives' with more, or more 'accurate', commitments with respect to which to draw a perspective-relative significance. Finally, in the visual analogy, though an object can be characterized by the collection of its projections, the object as such is categorically different from such collection; likewise, in Brandom's approach, though a concept can be characterized by the collection of its perspective-relative significances, the concept as such is categorically different from such collection.

3.2.4 Remarks on Brandom's insights

In the remaining of this section I shall review what I think are the pros of Brandom's account of language—with a little touch of my personal understanding on the matters—, and then make a discussion of what I think are its cons.

Pros

Brandom stands out in opposition to the traditional concept of content (information) in semantics, namely, that of the representational approach. He opposes to it an account based on the role of sentences and subsentential expressions in inferential practices. Using a sign (sentence or subsentential expression) is then connected to other things the agent ought to do, perceive, or say. In this respect, Brandom's notion of information goes beyond Tomasello's notion of a symbol; for the latter is only connected with a perceived object from a particular perspective.

Brandom's notion of information purportedly reproduces such particular case of a perceived object (but see below), as well as other circumstances where no object is perceived and dealt with.

Moreover, as Tomasello did with joint-attentional frames, Brandom acknowledges that the information of a sign is tied to the situation where it is used, because the inferential connections depend on the set of commitments that are undertaken at a particular moment by a given agent. This is, *prima facie*, in agreement with the suggested conclusion, in the previous chapter, that there is no independent interest in the meaning of mere combinations of words, since our descriptions of experiences of language-use are always tied to particular situations.

Brandom's account of understanding leaves room for a discussion of incomplete understanding, as opposed to Tomasello's own account. Such discussion relates to the limited abilities of agents (whence the distinction between acknowledged and undertaken commitments), and this fits in well with the conception, hinted at in the previous chapter, that linguistic competence seems to be more of an embodied, and hence limited, ability rather than an abstract, 'implementation-free' kind of software.

Cons

Now, one of the most appealing claims that we can find in Brandom's work is his idea that understanding the content of sentences and concepts consists in mastery of a practice. The most pressing questions with the specific way in which Brandom develops this idea are the reduction of representationalism to inferentialism, the autonomy of discursive practices, and the conception of semantic/conceptual competence. I shall deal with these questions in turn.

It is contentious that Brandom sets as a measuring-rod of his own approach the requirement that representational vocabulary be explained in terms of inferential vocabulary (see Brandom, 1994, pp. 135f). The most immediate problem with such move is that Brandom's theoretical apparatus does not meet this requirement.[43] Moreover, and more importantly for our purposes, it seems to me that it is misguided to narrow down the content of concepts and sentences to just one kind of information, no matter if it is referential or inferential. To set representationalism as a measuring-rod is then a misconceived strategy; it falls too short of what needs to be explained. Many words in our everyday life carry information in virtue of their roles in our day-to-day, non-inferential practices; we should not try and reduce such kind of information to either representational or inferential content (see below). Thus, the representational-rod is inappropriate to begin with.

Furthermore, inferential relations fail to account for important aspects of our practices that bestow information on expressions, such as purposes, emotions, and

[43]It would take us too far afield to go into the details of this issue, but see Lepore and Fodor (2001).

our bodily experiences. This entails that there are roles of expressions in practices that cannot be explained on the basis of inferential relations. As a consequence, Brandom's conception of inferentialist content cannot explain the information carried by a range of expressions. For instance, we can master all inferential relations regarding terms such as money, flirting, visas, reading, giving back change, etc., and yet if we are not able to carry out the practices in which these terms play a role, we cannot understand the information that these expressions carry (see below). This limitation of inferential relations as regards linguistic information also relates to the issue of the autonomy of discursive practices. For to draw inferences does not provide access to many practices—such as the above-mentioned ones—that nevertheless bestow content on a range of expressions.

The information carried by expressions such as "Hi, good looking!", "Cheer up!", "Shame on you!", etc., is such that it is mostly determined by an affective component that governs their use. Furthermore, understanding expressions such as "How much?", "Here's your change", etc., depends on familiarity with practices that cannot be reduced to a sheer drawing of inferences. In other words, mere familiarity with drawing inferences in a vacuum or a Chinese room, without familiarity with our day-to-day practices, will not give one access to the information that the above-mentioned expressions carry. For instance, to correctly understand the expression "Here's your change" one needs to recognize the proper uses of this expression, which in turn requires one to recognize when someone has correctly given change to someone else who has just payed in cash. And one cannot recognize this if one is not familiar with the practice of giving back change.

Another remark has to do with Brandom's conception of semantic/conceptual competence. Although he does not use the term 'semantic competence', Brandom claims, as we have seen above, that mastery of a concept can be conceived as mastery of a perspective-independent significance—i.e., a function that, given a set of collateral commitments (i.e., a 'perspective'), returns the commitments that follow from such concept and such collateral commitments, as well as the commitments from which such concept follows. Semantic/conceptual competence can then be identified with mastery of the perspective-independent significances (for short, significances) that constitute the contents of our concepts.

I have two qualms with such a conception of semantic/conceptual competence, viz., the contention that it is a social-perspectival account of concepts, and the contention that it can explain our grasp of concepts.

To begin with the social-perspectival account of concepts, it is Brandom's idea that such significance provides an explanation of the social and intersubjective character of our concepts. For the significance itself is defined as a function that returns the inferential connections that are appropriate to a particular commitment, corresponding to the varying perspectives of different agents. Such a definition is also used as a way out of an impasse to define communication as transmission of inferential relations, given that inferential relations are taken to depend on collateral commitments and these are different from agent to agent—the way

out is that communication is possible because the agents share a significance that allows them to obtain the inferential relations that are proper to each of these varying collateral commitments.

But to call such a definition 'social' does not make it into a social account of concepts. For nowhere is it required that there be more than one single agent who projects her own significance into a world that only she inhabits. Since she might well change her set of collateral commitments as she goes around her lonely world, she needs to be able to move from past-perspectives, going through present-perspective, to future-perspectives. All the while, and for the same reason, she will need to move from perspective to perspective; but she will be lonely. So there is no reason why such a 'social-perspectival' account of concepts must be legitimately called 'social'.

This is not in agreement with our descriptions of our uses of signs in everyday practices. Though some practices can be carried out in solitude, the individual that carries them out was introduced in these practices inside a cultural, multi-personal, environment. Moreover, many practices only work because there are participants with asymmetric familiarity with other practices; this is the case of the explanatory practices that I shall discuss in §4.1.4. The ubiquitous phenomenon of successful communication regardless incomplete understanding also occurs because of the asymmetric familiarity of the members of a community with some practices (see §2.2.3). Finally, many practices cannot be carried out with just one single participant, such as trading, money exchange, flirting, comforting, giving directions, etc.

Now, as regards Brandom's contention that mastery of a perspective-independent significance can account for our grasp of concepts, we should bear in mind that such a significance is not taken to define an embodied ability, but a normative status of what agents ought to do (Brandom, 1994, p. 636). Significance is a normative notion that must not be conflated with the dispositions an agent actually possesses. Compare:

> Conceptual contents on this inferential conception—and so what interlocutors are really committed to by using particular expressions (performing particular speech acts)—codify *proprieties* of scorekeeping. Any scorekeeper who attributes a conceptually contentful commitment may get these wrong, just as anyone who acknowledges or otherwise acquires such a commitment may get them wrong (*Ibid*, p. 627).

Thus, Brandom's detour through the 'social-perspectival' account of concepts, and the distinction between acknowledged and undertaken commitments, only moves the bump around the rug; an explanation is still required as to how agents relate to significances that determine the *correct* inferential relations that should be attributed to one another.

Brandom makes here a clever move: he invites us to conceive of ourselves, as theorists, as members of the community of agents inside his account of the game

of giving and asking for reasons (*Ibid*, pp. 639ff). Thus, the question as to how agents relate to significances is (purportedly) made equivalent to the question as to how agents attribute significances to other agents. For a theorist, Brandom says, who asks the question as to how an agent relates to a significance, is just another agent that does the same as everyone else in the game of giving and asking for reasons: keeping score.

By making this move, Brandom can also face the challenge of explaining just how well his account fits in with what happens around us—that is, that his game of giving and asking for reasons should be taken seriously as a model of what we in our everyday life do. The above-mentioned move entails that we should not look for a perfect fit between such account, couched in normative terms, and our descriptions of what happens around us, couched in descriptive terms.[44] And the reason why no perfect fit is to be found is because the account describes what norms agents should follow, not what the agents actually do; a mismatch here does not entail that the norms described by the account are not in force, but that they are broken. Compare:

> Interpreting the members of a community as engaging in discursive practices is interpreting them as binding themselves by objective, shared concepts whose proprieties of use outrun their dispositions to apply them. There is no answer that could be given in advance as to how much one must be able to get right in order to be interpreted as hooked up to one concept or another. Massive individual differences in inferential dispositions among interlocutors are compatible with interpreting them all as nonetheless governed by (answerable to) the same set of conceptual proprieties. For it is compatible with interpreting them as talking about the same objects, answering to the same set of objective facts (*Ibid*, p. 636).

Concomitant with this demand of adequacy is the gerrymandering problem, according to which any set of actual performances underdetermines the norms that govern such performances; for there are always diverging norms that equally accord with any given set of actual performances but differ with respect to other performances (*Ibid*, p. 645). Brandom claims that by conceiving of the theorist as just another member of the game of giving and asking for reasons provides us with the right way to face these difficulties: we can thus choose the norms that are in force in our practices, regardless of their violations in practice, among a range of different options that nevertheless accord with these observed doings. Compare:

> Thus the collapse of external into internal interpretation means that the problem caused by the existence of gerrymandered alternatives to any par-

[44] "Talk of grasp of concepts as consisting in mastery of inferential roles does not mean that in order to count as grasping a particular concept an individual must be disposed to make or otherwise endorse in practice all the right inferences involving it. To be in the game at all, one must make enough of the right moves–but how much is enough is quite flexible" (*Ibid*, p. 636).

> ticular discursive interpretation of another community from the outside is displaced to the context of interpretation and projection within our own community. This regress to our own interpretive practices dissolves, rather than solves, the gerrymandering problem concerning the relation between regularities and norms. For there is no general problem about how, from within a set of implicitly normative discursive practices, what we do and how the world is can be understood to determine what it would be correct to say in various counterfactual situations—what we have committed ourselves to saying, whether we are in a position to get it right or not (*Ibid*, pp. 647f).

The only work that remains to be done is to make explicit the norms that we already follow, as players of the game of giving and asking for reasons; we are such players, we just did not know it.[45] This is what Brandom claims to be doing in his oeuvre, and what explains the name "Making it explicit."

But as clever as this move seems at first sight, it remains to be seen whether it actually fits the bill. For it assumes, to begin with, what it needs to prove, namely, that the account of our grasp of concepts is adequately given in terms of inferential relations and significances. Second, it only addresses the question as to which significance one should attribute to the agents playing the game, but does not address the prior, and initial, question as to how an agent relates to a significance. The difference between these questions can be made perspicuous by analyzing in more detail the move from theorist to scorekeeper. The move is as follows: a theorist who asks the question as to *how* an agent relates to a significance is an agent that does the same as everyone else in the game of giving and asking for reasons, that is, she asks *what* significance ought to be attributed to another agent's assertions. But clearly these are different tasks: the theorist focuses on the 'how', whereas the scorekeeper focuses on the 'what'.

Hence, if no explanation is given how an agent relates to a significance, there can be no addressing of the question as to which significance, among many, an agent should choose. That is to say, if no sense has been made of the notion of the relation between an agent's practical dispositions to draw inferences and the inferences she ought to draw, no sense can be made of the notion of an agent's choosing to attribute this or that set of inferences that another agent ought to draw.

That no sense has been made of such relation between practical dispositions and normative inferences follows if we take seriously Brandom's claim that

[45] "The norms that determine the propriety of choices as to which discursive practices, and so which implicit conceptual norms, to attribute to those we take to be talkers are not available in advance as a set of explicit principles. They are implicit in the particular practices by which we understand one another in ordinary conversation" (Brandom, 1994, p. 646). "For our own practices come to us with the norms in; ... We are always already inside the game of giving and asking for reasons. We inhabit a normative space, and it is from within those implicitly normative practices that we frame our questions, interpret each other, and assess proprieties of the application of concepts (*Ibid*, p. 648).

our abilities are always limited, as discussed above. For such limitation should amount to an agent's not being able to draw all the right consequences from a commitment, or not being able to attribute the commitments that she ought to attribute—and hence, not being able to completely 'hook up' to the perspective-independent significance. Consequently, Brandom has not given a satisfactory account of semantic/conceptual competence: he has not explained what it means that an agent relates to a normative set of inferences that constitutes the content of a concept or the meaning of a sentence. Such set remains as abstract and mysterious as Frege's notion of a thought, which lives in a third-realm of non-physical, non-mental entities.

***

We should now turn to the presentation of the outline of a theory of language and meaning that acknowledges the insights from the discussions in this and the previous chapter, and that meets the criteria of adequacy that I have set for such endeavor.

Chapter 4

Towards a practice-based account of information

4.1 The plan for an alternative semantics

4.1.1 Why practices?

I contend that semantics, conceived as the study of literal meaning and semantic competence—i.e., the abilities that underly linguistic production and understanding—has to be informed by a theory of practices. But what has a theory of practices got to do with literal meaning and semantic competence? The formal semanticist does not see the relevance of a theory of practices in semantics. Moreover, although the formal pragmatist may take account of a theory of practices for his or her own pragmatic theory, this theory is already informed by a semantic theory, which in turn is conceived to be prior 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. As opposed to this, I contend that a theory of practices makes essential part of a semantic theory.

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 facts (or states of affairs) above-mentioned 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.[1]

[1]To put it another way, we can make a comparison between, on the one hand, the relation between world, facts, and language in Wittgenstein's *Tractatus* and, on the other hand, the account I propound here. In the *Tractatus*, the world is defined as the totality of facts. Hence, what the world is depends on a prior definition of what facts are. And these facts and the

Our discussion of symbolic kinds—i.e., the concepts the extensions of which depend on the proper use of signs that express those concepts (see §2.1.1)—shows that there are parcels of our 'human world' that are not independent from our uses of signs. For instance, that a beer costs 3 Euros in a particular store is a fact about our 'human world' that is not independent from the use of signs that express the fact that such beer costs 3 Euros. In particular, if we want to explain linguistic information, we have to account for the information carried by words such as "yellow card," "entrance ticket," "passport," "citizen," "university student," "admission," "approbation," etc., all of which express symbolic kinds.

Symbolic kinds partly constitute our 'human world'. Regardless the non-physical nature of the sort of objects belonging to such kind of concepts, the fact remains that we understand and talk about them; we do not go about our every-day 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 most fruitful way to account for such objects, in my view, is to start out from the idea that our inquiry need not meet reductionist scrupulous.

Contrary to mainstream theories of language, I believe that the question as to how to reconcile the information carried by language, which deals with non-physical 'objects', with the world as described by the natural sciences is a vexed one. That is, if such reconciliation is motivated by explanatory reductionism—i.e., 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).[2] I believe that no illuminating answer about the information carried by language can come from this reductive reconciliation.[3] For the study of the information carried by language is not in the business of making claims as to what are the constituents of the world as described by the natural sciences. The 'objects' presupposed by our language

logical relations between them are already there, layed down in advance of language-use. In the *Tractatus*, moreover, the fundamental semantic relation is that of reference between simple names and simple objects (and their agreement in logical forms), which underwrite a picturing relation between sentences and facts. As opposed to this, I contend that the world contains an open-ended collection of practices. Hence, an account of what the world is—i.e., our 'human world', which is the locus of language—requires, *inter alia*, a prior definition of what practices are. I also contend that one of the fundamental semantic concepts is that of the roles of words in practices. Note that if many words acquire their meaningfulness in virtue of the roles they play in practices—i.e., language-use—, then language is not independent from practices and practices are not independent from language-use.

[2]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 "How, 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)

[3]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 (see §2.1.2).

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. We can see that the ontology presupposed by our language and metaphysics (in the broad sense) are different 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.[4]

Now, the gist of an account of symbolic kinds resides in the notion of use. There are several situations and properties that any theoretical account of use has to explain and preserve. To begin with, as stated by our criteria of adequacy (see §2.1.2), such theoretical account should preserve our descriptions of our uses of language in everyday life. Furthermore, the notion of use requires to explain that our activities are governed by rules, precepts, principles, and legislations. By means of example, suppose that a foreigner requires to ask for a work permit from the Immigration Office of the country that he lives in. In order to accomplish this, he needs to fill out some forms, some of which express or are related to the concept [to be granted a work permit of country X]. He also needs to hand in these forms, some other documents, and pay a fee. Now, doing all this is part of using signs and expressions that express or are related to the concept [to be granted a work permit of country X]. These signs and expressions, moreover, will be used also by the staff at the Immigration Office either to grant or deny a work permit to this person—and hence the extension of such concept depends on such doings and sayings. All these doings and sayings on the part of the staff are governed by rules and legislations. *A fortiori*, the foreigner's doings and sayings, as far as asking for a work permit are concerned, are also governed by these rules and legislations. Furthermore, and to the extent that a concept determines its extension, the concept [to be granted a work permit of country X], since it depends on the doings and sayings of the staff at the Immigration Office, is also governed by rules and legislations. Hence, the account of the 'use' of signs and expressions that express the concept [to be granted a work permit of country X] requires to take into account how the participant's actions are governed by rules and legislations.

Moreover, the notion of use has to account for the observation (see §2.2.2) that our abilities to use language are more of embodied ones, rather than rule-based and implementation-free programs. And such a notion of use should also account for the fact that we can successfully communicate despite incomplete understanding of the expressions used. This point deserves a closer scrutiny.

[4]This is not a paradox, but an argument to the effect of showing that metaphysics and natural language metaphysics are different. Such a difference can also be maintained regardless the fact that each natural language metaphysics 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 natural language metaphysics.

Suppose a child enters a butchery to buy a particular meat-cut, say beef chuck short ribs, that his mother wants to prepare for supper. The child has been given twenty euros and has been instructed to buy as much of this meat-cut as this money affords. The child asks the butcher "How much a kilo of beef chuck short ribs?" (he has learned by heart the name of the meat-cut, but he really does not know what it is). The butcher says "Six euros;" The child answers: "Three and one third kilos, please." Let us start out by focusing on the concept [beef chuck short ribs]. It must appear as fairly uncontroversial that the extension of such concept depends on our actions on physical entities. For although the meat itself was inside the cow, the concept does not refer to a particular part of the cow, but to the meat already butchered and kept separated from the rest of the meat—no-one uses the expression "beef chuck short ribs" to refer to a not detached part of a cow. Furthermore, the words "beef chuck short ribs" on the child's mouth carry an information that depends on our activities on physical entities, regardless of the fact that the child cannot be said to completely understand this expression. Moreover, as discussed in §2.1.2, our ability to use mathematical signs depends on the representation of numbers that was chosen, which strongly suggests that the ability to use those signs is more of an embodied capacity to manipulate signs in particular ways, rather than an implementation-free algorithm. An account of the notion of use should explain these points.

I propound that, to achieve these desiderata, the word "use" should give its way to the expression "role in a practice." Thus, we will look for a theory of practices that allows us to provide a description of the roles that words, expressions, gestures, and symbols (*signs*) play in practices. For many sings used in our everyday life, though not all of them, carry information in virtue of these roles—we shall refer to this kind of information as *practice-based information*. We must emphasize 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.

I will avoid here the discussion whether the roles that signs play in practices can be properly called semantic ones, because this discussion will inevitably degenerate in a problem of definitions. For instance, a formal semanticist would be reluctant to call these roles semantic ones inasmuch as they are not based on a relation between words and referents. But, clearly, his/her claim depends on the previous acceptance of a conception of semantics as the study of relations between words and referents (and, the formal semanticist would add, their rules of composition).

However, we can adduce two reasons to support the idea that these roles are indeed semantic. First, the roles that sings play in practices underwrite the speaker's 'semantic competence', for they explain the speaker's ability to comprehend and produce words and expressions (see §4.1.3). If some of these roles do not require a prior referential relation between signs and referents, so much the worse for the primacy of the referential relation in semantics. Second,

conceiving of these roles as the information carried by many signs makes room for an analysis of the above-mentioned desiderata, as I shall try to argue for in this chapter.

Thus, I believe that a semantic theory can profitably make use of the following elements: (i) a theory of practices; (ii) an account of the role that words and expressions play in practices; (iii) an account of how these roles underwrite the speaker's ability to comprehend and produce words; and (iv) an account of literal meanings.

4.1.2 Practices and information

A theory of practices

The present discussion of practices and understanding is based on Schatzki's *Social Practices* (1996, chapter 4) and *The site of the social* (2002, chapter 2).

To begin with, Schatzki makes an important clarification as to what a practice is *not*. The important target of analysis for him, as well as for our present purposes, is not that of a practice as doing something repeatedly (e.g., when one is practicing the piano), nor is it that of practice as opposed to theory. The notion of a practice that Schatzki, and us, are interested in is a "temporally unfolding and spatially dispersed nexus of doings and sayings" (Schatzki, 1996, p. 89).

Besides doings and sayings, I shall add to the components of a "temporal unfolding and spatially dispersed nexus" both the inputs and outputs of practices. That is, the notion of a practice becomes that of a temporal unfolding and spatially dispersed nexus of doings, sayings, inputs and outputs.[5]

My motivation for this addition is the following. Although inputs and outputs make part (in an implicit way) of Schatzki's analysis, I want to bring them to the fore to make justice to a distinction that played a crucial role in my discussion of incomplete understanding in the previous chapter. I have argued that it is possible to recognize or comprehend the product of a process without being able to recognize, comprehend, or produce the process that brings about this product. For instance, one can understand the measure of the distance between Earth and a distant star, without being able to understand or carry out the process to find out such a measure; or one can recognize a cappuccino without recognizing or being able to carry out the process of preparing a cappuccino. This distinction underwrites my discussion of incomplete understanding and the concomitant socially shaped aspect of purposes.

It is worth noting that it is assumed here that the output of one practice can be the input of another. Furthermore, both inputs and outputs can be physical—e.g., the wood and nails that are used to create a chair—, or symbolic—e.g., the

[5]I believe that we should also add the tools that people use in their practices. However, for the sake of simplicity, and since nothing substantial for present purposes seems to hinge on it, I will leave them out from the present account of practices.

function x^2 as an input for the practice of finding the derivative of a function, and $2x$ as the output of this practice. I sometimes call physical inputs "materials," and physical outputs "crafts."

Doings and sayings, according to Schatzki, are "linked" by an *organization*, which consists of (A) practical understandings; (B) rules; and (C) a teleoaffective structure.[6] I will extend this organization to link not only doings and sayings, but also inputs and outputs.

Different practices have different organizations. Moreover, that a component of a practice's organization "links" doings, sayings, inputs, and outputs means that any given number of doings, sayings, inputs, or outputs belong to the nexus that composes the practice if the component 'deals' with them. This point will become clearer with the description of the components of a practice's organization.

The practical understanding that belongs to the organization of a practice p—i.e., (A) above—can be decomposed in a number of abilities. The abilities of a practical understanding are the following (adapted from Schatzki, 1996, p. 91):

(i) to be able to *recognize* a fair amount[7] of *doings and sayings* as instances of the practice p—e.g., by expressing normative reactions such as assenting when the performance is good, or disgust when it is not.

(ii) to be able to *recognize* a fair amount of *inputs and outputs* of practice p—e.g., the shower as the place where to take showers or to recognize a hot beverage as a cappuccino;

(iii) to be able to *carry out* doings and sayings that are instances of p;

(iv) to be able to *prompt* instances of the practice p—e.g., prompting the bartender's practice of serving beers by showing him or her with a gesture of the hand how many beers one wants;

(v) to be able to *respond* to instances of the practice p—e.g., to respond to the practice of ordering beers;

As far as the abilities of particular individuals that participate in practices are concerned, it seems relevant to make a distinction between the abilities that can be

[6] In *The site of the social*, Schatzki adds to a practice's organization a fourth component, namely, general understanding. This concept refers to the "sense of common enterprise" or the qualitative evaluation that participants endorse by being aware of their participation in a certain practice. For instance, the sense that they are carrying out God's will, or that they must do what they do to defend democracy, etc. Though important as this component may be, for the sake of simplicity, and since nothing substantial for present purposes seems to hinge on it, I will leave it out from the present account of practices.

[7] The expression "a fair amount" may be misleading, for it suggests that it could be possible to quantify the proportion of correct acts of recognition that an able person should be in a position to carry out. However, I do not think that it is necessary, or even possible, to obtain such a quantification. I just use this expression for lack of a better one. The same goes for item (ii).

classified as comprehension, the abilities that can be classified as production, and the abilities that can be classified as both. For instance, the abilities to recognize a practice's doings, sayings, as well as its inputs and outputs, clearly fall within the comprehension category. To carry out a practice's doings and sayings clearly falls within the production category. These categories do not seem altogether independent from one another. For the abilities to respond to, and prompt, instances of a practice seem to belong to both categories of comprehension and production (e.g., in order to be able to prompt instances of a practice, one must be able to recognize, to some extent, this practice's inputs, outputs, and/or doings; the same is even clearer in the case of responding to a practice's instances).

One can be familiar with some practices by possessing comprehension abilities while at the same time only possessing underdeveloped production abilities. For instance, one does not need to possess abilities to play football in order to possess abilities to comprehend it (this practice includes not only the players' actions and roles, but also the signs used in the game—e.g., the court's divisions, the uniforms, the referee's cards, the flags, etc.). The same can be said of practices such as tennis, chess, dancing, etc. There are other practices the familiarity of which seems also to require production abilities. For instance, one can not recognize when someone is reading, and not merely pretending to read, if one can not read. Something similar can be said about the practice of finding out the derivative of a function, to exchange money, etc.[8]

Note that it is also possible to be able to recognize inputs and/or outputs of a practice but be able to a very limited extent to recognize carrying outs of the practices that bring about these inputs and outputs. The case of measuring how far away from Earth a star is has been already mentioned. Other examples are the recognition of a croissant without recognizing when someone is preparing one; or the recognition of a paper-made pigeon without recognizing someone's actions on a piece of paper that create it; etc.

Links between doings, sayings, inputs, and outputs are sometimes tied to explicit rules, principles, precepts, or instructions—i.e., (B) above. "This means that people take account of and adhere to these formulations when participating in the practice" (p. 100).[9]

[8]Just as there are practices the familiarity of which can consist, for the most part, of abilities of "comprehension," or of mixed abilities of "comprehension" and "production," there is room, at least conceptually, for there being practices the familiarity of which can consist, for the most part, of abilities falling into the "production" category. For instance, an American football player that plays defense can be fairly familiar with his practices only by carrying them out, and by responding fairly well to attacking practices, without being himself able to recognize or prompt the kind of defensive practices he can carry out. Or the pupil of a mythical martial art can be trained by being told to do this-and-that without ever seeing his master, or more advanced pupils, at work carrying out movements in order to imitate them. Whether "comprehension" always precedes "production" shall remain as a topic for further investigation.

[9]In the context of a theory of practices that underwrites a semantic theory, component (B) might strike as a threat of circularity. However, rather than circularity, this component brings to

The doings, sayings, inputs, and outputs of some practices are associated with a hierarchical order of purposes and projects, and with a range of emotions. These hierarchies need not be, although they could be, explicitly stated in linguistic or symbolic formulations. This is what Schatzki calls a teleoaffective structure—i.e., (C) above. For instance, a practice, say cooking, requires a hierarchy of purposes—e.g., chopping the vegetables, preparing the dressing, preparing the salad, etc.—and a concomitant hierarchy of projects—e.g., measuring the amounts of vinegar, honey, and olive oil in such and such a way, mixing the vinegar, the honey and the olive oil in such and such a way, etc. Some but not every practice includes a range of emotions. Practices that include a range of emotions are, e.g., rituals, comforting, cheering up, flirting, etc. On the other hand, cooking, chopping, writing, etc., do not include a range of emotions.

Schatzki defines *Integrative practices* as those practices the organizations of which include (A)–(C). The organization of *Disperse practices*, on the other hand, only include (A). This is Schatzki's terminology, but for our purposes we might well allow for a continuum of organizations that contain, in varying degrees, the elements belonging to (A)–(C). Among this continuum, there will be the two categories defined by Schatzki.

An aspect that I deem essential to the present account of practices is the asymmetric character of the members of a community with regards their practices, as well as the asymmetric character of the participants of a given practice (Schatzki, 1996, p. 93). The former asymmetry separates, among the members of a community, experts from laymen; the latter asymmetry separates, among the participants of a given practice, experts from novices.

The terms 'expert,' 'novice,' and 'layman' shall be used here to describe different relationships with practices, despite the fact that it seems somewhat awkward to use these labels with some practices—e.g., to be a layman in the practice of greeting people. The different relationships with practices can be characterized not only in terms of familiarity, but also in terms of capabilities. I am not only unfamiliar with Olympic gymnastics, but I am incapable of practicing it. And I am very well capable of driving a bus, but I am not familiar with it. Moreover, I am familiar with football but I am capable of practicing it only to a very limited degree. Thus, given a practice p, an 'expert' in p has a very close relationship with p in terms of capabilities and familiarity; a 'novice' has a certain extent of relationship with p, e.g., by being capable of carrying out p but not being so familiar with it; and a 'layman' has a distant relationship with p, e.g., by being poorly familiar with p and perhaps by not being capable of carrying out p.

The novice's process of learning or internalizing a practice can be analyzed into the processes of learning or internalizing each component of the practice's

---

the fore the holistic character of the kind of explanation of language and practices propounded here. For the way explicit rules, principles, instructions, etc., organize practices can be further explicated by the kind of semantic theory that I recommend here, especially by the roles of literal meanings that we will discuss later on.

organization. In the case of an integrative practice, for instance, it is likely that the novice learns or internalizes aspects of the teleoaffective structure and some of the rules of the practice in a first step, and then starts to gain some of the understanding that constitutes component A of the practice's organization. Note that the possibility of incomplete understanding, which underwrites the possibility of having incompletely understood purposes and to use incompletely understood expressions, plays an important role in the first step of the novice's learning or internalization. The familiarity gained with component A will allow the novice to learn or internalize more and more of the teleoaffective structure and to attribute significance to the rules or precepts that she learned or internalized in a previous step. This process can be seen as a back and forth process where familiarity with one of the components of the practice's organization allows for further familiarity with another of these components. The case of learning or internalizing disperse practices is more of a matter of shaping a person's know-how.[10]

The roles of signs

With a theory of practices at our disposal we can delve into a characterization of the roles that signs might play in practices (note that I am not claiming that this is the only way in which signs can be meaningful). To this effect, we can analyze each component in a practice's organization to determine what roles signs can play.

Starting with component A, the first role that we can pin down is that of using a sign for the *attribution of p-ings*. That is, if the speaker recognizes that someone is carrying out practice p, she can assert, perhaps accompanied by an ostensive gesture, "she is w*ing*!" (by analogy with the case when someone calls a rock "rock!"). For instance, when Mary asks Paul "Where is John?" and Paul says "He is fixing his bike."

A sign can also be used to *refer to p-crafts* (that is, outputs of a practice). For instance, to refer to raincoats, cappuccinos, boats, etc.

A sign can play the role of being the *output* of a practice. For instance, words and expressions are the outputs of the practice of describing, asking, reciting, etc. Symbols are the outputs of counting, measuring, solving an equation, etc.

A sign can also be used to *refer to the material inputs* of, or the tools used in, a practice—e.g., showers, nails, hammers, etc.

Another role is that of using a sign as part of *carrying out* a practice. For instance, when some children are playing "You are 'it' " and one child touches another and claims "You are 'it'!". Or when the referee shows a player who misbehaved in a soccer game a yellow card. Or when a Ministry of Foreign Affairs issues a visa to someone so that he or she be allowed to legally work in a country.

[10] A detailed description of both kinds of learning or internalization is beyond the scope of the present dissertation, and shall remain as a topic for further investigation.

A sign can play the role of being the *input to, or the way to prompt, a p-ing*. For instance, if someone holds one finger in high in front of a bar tender, this could be the input for the bar tender to give him (or her) a tap beer. Or the name of a meat cut and a particular weight could be the input for the butcher's practice of cutting and selling this amount of this particular meat cut.

A sign can be the way of *responding to a p-ing*. For instance, the bar tender's nodding in sign of recognition of someone's holding one finger in high asking for a beer. Or the current time when someone asks you the time.

Now, with regard to component B of a practice's organization, a sign can play the role of being part of a rule or precept. An extension of this role is for a word or expression to be part of a theoretical body of knowledge. For instance, by being part of a definition of another expression, by being a shorthand for a bigger expression, or by playing a particular role in a theory, such as the expression "transfinite cardinal," which plays a particular role in (formal or informal) set theory.

As for component C, some words play a role in prompting certain emotions when they are accompanied by certain gestures and/or moods. For instance, the expressions "Cheer up!" or "Hi, good looking" are used to prompt particular emotions. Signs can also be used to stand for goals (e.g., a theorem to be proved, 3D images of a building to be built, etc.) and projects (e.g., a flowchart, a to-do-list, etc.).

A practice-based account of information

With this account of the roles of signs at hand, I suggest that these roles constitute the information that many signs in our language carry. Note that this information is relative to the practice of which the role is a part. We can make this point clearer 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).[11]

[11] "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. 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).

The sign corresponds to the sequence of 0s and 1s that are introduced in 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. The information carried by a particular sequence of 0s and 1s consists in that a given program, working on this input, will produce a particular behavior of the head of the Turing machine, which in turn will produce a particular output on 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 sequence may carry different informations relative to different programs. By analogy, a sign is meaningless on its own, and is only meaningful against the background of a particular practice in which the sign plays a role. The sign can carry different informations relative to different practices.

Sequences of 0s and 1s can also be the outputs of the execution of a given program of a Turing machine. Likewise, signs can be the output of practices. Physical objects can also be inputs and outputs of practices, and hence they also play a role in practices. This means that physical objects—i.e., materials and crafts—also carry information in the way that I have propounded here.

The analogy breaks down in the following points. Whereas a Turing machine requires only the action of a single head over a single tape,[12] which seems to invite the analogy between Turing machines and minds, there are a good deal of practices that essentially require at least the participation of two persons, e.g., selling or buying. In particular, I am not claiming that signs are bestowed meaning by the act of a single mind. In view of my discussion of incomplete understanding, it becomes clear that the information carried by a sign depends on the interaction between several participants.

Furthermore, a Turing machine abstracts away from changes in the machine itself. But practices are in constant change due to changes in the participants, or by an intrinsic change in one or several of the participants, or by a change in the materials that are the input of the practice, or by a change in what the output of the practice should be.

Another point where the analogy breaks down is that a Turing machine does not seem suitable to give a proper account of those roles that essentially depend on purposes and emotions. This limitation requires an argument, but it is beyond the scope of the present dissertation to delve into this particular point and shall remain as a topic for further investigation.

[12]The computational power of machines with multiple heads and multiple tapes is exactly the same as a machine with only one head and one tape.

4.1.3 Language intelligibility

Intelligibility

The speaker's ability to comprehend and produce words can be explained, in my view, in terms of what I shall call "language intelligibility." According to Schatzki, intelligibility is "making sense." There are two dimensions of intelligibility: world intelligibility and action intelligibility; "how the world makes sense and which actions make sense" (Schatzki, 1996, p. 111). Schatzki does not define explicitly, however, a notion of language intelligibility. I contend that language intelligibility can be analyzed in terms of both world intelligibility and action intelligibility; language is a complex notion of which both objects (spoken or written words and expressions, mathematical symbols, traffic signs, etc.) and actions (speech acts) make part.

World intelligibility concerns how objects are understood to be. Such an "understanding to be" is an ability possessed by a person, and is expressed in both her sayings and doings as regards the object. For instance, a person's understanding of an object o, say a tree, "is expressed in her calling it a tree, what she says about it, and how she acts toward it (e.g., climbs it, feels it, or admires its foliage)" (Schatzki, 1996, p. 111). Note that objects can be categorized in virtue of their being expressed by similar doings and sayings.

Though the expression of an "understanding to be" is important, the phenomenological experience thereof is just as important. Not only because often people do not express their "understanding to be" as regards familiar objects, but because such expression co-depends with such experiences. For instance, how one experiences a given pen, say by perceiving it and handling it depends on how one has been taught to use other pens; and how one uses now such pen depends on how one experiences it—too thin, too heavy. Moreover, the acquisition of this "understanding to be" depends on the person's being exposed to speech acts, as well as her observing or carrying out activities with, or on, the kind of objects that belong to this "understanding to be." "Understanding is expressed and acquired in a tightly interwoven nexus of doings and sayings in which neither the doings nor the sayings have priority" (*Idem*).

Sayings and doings are usually part of a nexus that belongs to one or several practices. The "understanding to be" is relative to some practices because it partially overlap with the practical understanding of those practices. This is what it means that "[h]ow things make sense is articulated primarily within social practices, for it is within practices that what things are understood to be is established" (*Idem*).

A particular case of world intelligibility is when the objects that are made sense of are spoken or written words, conceived in abstraction of the speech act that brings them about (e.g., when one is reading a book or a sign on the road). The intelligibility of these linguistic objects is expressed and experienced in relation to

a nexus of sayings and doings that belong to some practice, which partly define the role that these objects play in the situation in which these signs are perceived.

As for action intelligibility, this notion refers to what actions make sense to a person to do in a particular situation. "Although people are always able and prepared to do a variety of things, at a given moment they invariably carry out those actions that are signified to them as the ones to perform" (*Ibid.*, p. 118). Schatzki identifies two dimensions to what is signified to do. Under the first dimension—i.e., the teleological component—there are the purposes and projects that a person entertains in a given situation. And under the second dimension—i.e., the affective component—there are the emotions, moods, feelings, and affects that a person entertains in a given situation.

Actions are made sense of against the background of the integrative practices the teleoaffective structure of which partly contains the two dimensions of what is signified to do. The "partly" is important given that in a particular situation the two dimensions of what is signified to a person to do need not completely fit the teleoaffective structure of any practice that this person (or the interpreter of this person's action) is familiar with. For instance, a person may pick up the phone to order a pizza in order to give a treat to his girlfriend. Thus, the purposes and projects of the practice of ordering a pizza only partially fit what is signified to this person to do, and the same goes for the purposes and projects of the practice of giving a treat.

A particular case of action intelligibility is when the action is a speech act. The identity of the speech act shall be analyzed here in terms of the words used and the situation in which the speech act is performed—i.e., the situation of use. But before we delve into the characteristics of a situation of use, it is worth noting that action intelligibility, in the case of a speech act but also in many other cases, depends on world intelligibility. That is, to make sense of someone's speech acts one depends on, among other things, how one makes sense of the words that she uses.

Situations of use

No use of a sign is carried out in the vacuum; it always occurs in a *situation of use*. Before I lay down the elements of a situation of use, I want to introduce this concept by means of an example.

My wife and I want to buy a sofa. The sofa has to fit in the living room, so we have decided that the sofa needs to be no longer than 1,65m. Now, suppose I am playing chess at my brother's and my wife calls me and tells me "I found it, it is brown and is only 1,50m." I take it that I do not understand what my wife told me unless I let her know that I get it that she is talking about the sofa that we were looking for, that I need to give her my opinion on the matter, and that we need to reach an agreement. The agreement might be that I am busy at the moment and that it would be better to discuss the issue later on, or that I

trust her judgment on color and length, but that I want to know the price before making any decision (so that she needs to let me know the price of the sofa), or that I will head for the store where she is calling me from, or something along these lines.

That the sentence "I found it, it is brown and is only 1,50m" is highly context dependent goes without saying. The 'features' of the situation that are required to understand this sentence are the following: (a) that the situation includes my wife and me; (b) that we share a vocabulary that includes the words used in that sentence, and also words such as "sofa", the numerals, some colors, "look for," "tell me," "not now," etc.; (c) that we have an immediate purpose, namely to find a sofa for our apartment; (d) that uttering sentences is not an end in itself, that is, that we take our utterances to have an effect on the other person in order to reach (extra linguistic) purposes; (e) that I can not consider myself to understand, nor will my wife take me to have understood,what she told me unless I try to find an agreement with respect to our purpose—even if it consists in suspension of the achievement of this purpose to a later moment; and (f) that if something goes wrong in this exchange, we will show each other what we expect from each other in a future opportunity.

Going to a higher degree of generality, we can describe the previous features of a situation of use in the following way (adapted from Stein, 1997, p. 136):

(a) the participants of the exchange;

(b) the words potentially used and understood by the participants;

(c) some (extra linguistic) practices;

(d) a place of language in these practices—i.e., the role of words and expressions in these practices;

(e) a description of various standards of success in relation to various (short and long term) purposes;

(f) an indication of various ways in which the members of the community can train themselves into using their language (according to their various purposes), if the exchange is not successful.

On the basis of this six-fold structure of a situation of use we can define a *type of situations of use* by fixing five or less constituents and varying over the remaining one(s). For instance, given a situation of use that consists of two participants, we can obtain a type of situations of use by varying over the participants and keeping (largely constant) the remaining five constituents.

Finally, it is worth noting that since communication always occurs in a situation of use, the purpose of the exchange is always tied to this situation, and so is the experience of each of the participants. Note that the situation of use makes sense (for each of the participants) against the background of some practices. In most everyday situations, it is by reference to them that many of the

words used in the exchange carry information. Hence, changing the practices that occur at the background of the situation entails changing the information that these words carry in this situation. Furthermore, each situation of use comes with its own teleoaffective structure, depending on the teleological and affective dimensions that each participant is in.

Understanding

Understanding shall be conceived here as the ability to act (or react) to address the two dimensions of the teleological structure of a situation of use—i.e., to carry out projects and achieve purposes, as well as to address the emotions and affections of the situation. This ability, in virtue of its internal relation to purposes and practices, is inherently social and tied to types of situations.

As for the inherently social aspect of understanding, we can introduce it in terms of the example of the cappuccino, presented in the previous chapter. The short version is that B, although not familiar with cappuccinos, is able to get A a cappuccino by asking C, a coffee shop waiter, "a cappuccino, please?".[13] One interesting part of the story is that although B has been attributed the purpose of getting A the product of p, i.e., a cappuccino, B is not familiar with it or with the practice that produces it.

In this example, A, B, and C understand the expression "w" to different extents. As far as the example is concerned, all A, B, and C acted and reacted satisfactorily to the expression "w" to achieve their purposes. But their varying degrees of understanding depend on the extent to which their abilities are enough to achieve purposes, as far as "w" and practice p are concerned, in different situations.

For instance, B can successfully get someone the product referred to by "w" provided that there is someone else that can prepare it for her, and this is the extent to which B's abilities allow her to achieve purposes as far as "w" and practice p are concerned. Note that this ability on B's part essentially depends on there being someone else, namely C, that participates in the achievement of the purpose. Hence, B's ability, and therefore B's understanding, is socially shaped.

[13] The long version is the following. Suppose that "w" is an expression that refers to a practice p. Say p is the practice of preparing a cappuccino. Suppose that A craves for the craft that is obtained from carrying out p, that is, a cappuccino, but suppose also that she is familiar with p only to a limited extent because she is only familiar with p-crafts. Furthermore, suppose that B is not familiar with p at all because she is not able to carry out p nor is she able to recognize p-crafts. Moreover, suppose that A and B live in a society where there are people like C, who are (completely) familiar with practice p. Now, in order for A to achieve her purpose of obtaining a p-craft, she can use the expression "w" in order to prompt the practice of getting a p-craft from someone, in this case B. Since we can assume that B has given herself the duty of taking care of A, but she does not know what a "w" is, B goes to C and asks "w." C recognizes this as the input to the practice of selling the product of p and promptly sells a cappuccino to B. That is, in order for A to enjoy a cappuccino, she can ask B for a cappuccino, who in turn can buy one from C.

If we go beyond this type of situations, by considering other types of situations and by taking into account the dissimilar familiarities of A, B, and C with respect to p, we will see that A understands "w" better than B does, and that C understands "w" better than A does. For, according to the previous conception of understanding, there are (or could be) many situations where A could not achieve her purposes, and there could be even more situations in which B could not achieve her purposes, as far as the roles of "w," and practice p, are concerned.

Another way to put this is the following. Understanding is an ability that depends on types of situations of use. Let $[\![X]\!]_{w,p}$ be the set of situations of use where an expression "w" plays a role in practice p and where X can successfully achieve purposes and/or address the range of emotions of these situations by using "w." For instance, $[\![B]\!]_{\text{“}cappuccino\text{”},p}$, where p is the practice of preparing a cappuccino, is the set of situations in which B can give someone a cappuccino by using the expression "cappuccino." With this notation at our disposal, we can relate A's, B's, and C's understanding, as far as the previous example is concerned, in the following way: $[\![B]\!]_{\text{“}cappuccino\text{”},p} \subseteq [\![A]\!]_{\text{“}cappuccino\text{”},p} \subseteq [\![C]\!]_{\text{“}cappuccino\text{”},p}$.

Types of structures of phenomenological experiences

We go about our day-to-day life most of the time in a low-level of attention, more or less predicting the outcomes of our, and many other people's, actions. When we participate in successful linguistic exchanges we do not pay attention to the words but to the themes they deal with. We experience such themes as determinate objects, and we set standards of success for our exchange in an unreflective fashion. In all the situations that constitute this recurrent day-to-day life, we are in a constant experience of success, till something goes wrong.

When something goes wrong in our activities (e.g., we do not obtain the desired result, we fail to anticipate someone's actions when we expect to be able to do it, our instruments break, our interlocutor is hesitating too much, etc.) we start paying attention to the situation. We dissect it into (relevant) components to try and find and fix the source of the failure. But before we reach a state of full reflection, we experience a number of things. We become aware that we are in a particular situation, and we sometimes start to feel tension or discontent. We feel that the situation, although familiar in many ways, does not look familiar in many other respects. In the case of failure of a linguistic exchange, we start paying attention to the words. We experience that the theme of the exchange is becoming problematic because, for instance, it may not seem as something determinate, or we may feel that we are not sure which is the theme of the exchange (among several ones).

I assume that there are three relevant structures of phenomenological experiences: success, failure, and reflexion. It is worth noting that there could be experiences of success, failure, and reflection as regards many situations. How-

ever, we focus here on the kind of experiences that have to do with the use of words or expressions in particular situations. That is to say, the terms "experience of success," "experience of failure," and "experience of reflection" have restricted uses from now on.

In a general fashion, the structures of experiences of success and failure can be characterized as follows:

Experience of success
Unreflective
Familiarity
Assumption of determinateness
Sense of success
(Images, certainty, ...)

Experience of failure
'Pre-reflective'
Familiarity is in conflict
Assumption of determinateness is in conflict
Sense of failure
(Discontent, tension, ...)

(Note that I assume that the experience of failure is always preceded by an experience of success.)

Whether a person has these experiences is in part due to his/her particular familiarity with the practices in which the expression in question plays a role. That is, a layman, a novice, and an expert have different experiences due to their varying degrees of familiarity with the practices they are involved in. For instance, where a novice with respect to the practice of tailoring may not notice the inadequacies of his/her traces and cuts—and thus not (yet) experience a failure—an expert is tuned and sensitive to traces, cuts, and their outcome in such a way that he/she can easily note inadequacies in his/her, or someone else's, performance.[14]

Let us now turn to a brief description of the experiences of reflection by means of an example. In the example of the cappuccino, the exchange between A and B, that is, A's addressing "a cappuccino (please)" to B, could go wrong since B might well not know how to achieve her purpose of getting A a "cappuccino." For instance, she might not know where she can go to buy whatever A is asking for. This might be evident in B's expression of discontent and (mild) tension. So both A and B might become aware that the exchange is not successful and have an experience of failure. The situation may continue when A says to B, "This is a cappuccino" and shows to her one picture of a cappuccino. Or she might say, "A cappuccino is a kind of coffee." Both A and B experience this exchange in a reflective way, although A will take a leader stance, whereas B will take a follower stance. They will both have an attitude of 'going back to the basics'—i.e., that there is something they should take for granted, and that this something is just how things are—, and an attitude of 'ought'—i.e., that this is how things should be, not only now, but in a way that goes beyond this particular situation.

[14]This point is illustrated in detail in Ritveld's (2008) discussion of normative discontent. The relations between normative discontent and the present account of experience of failure, as well as the way in which the present account can be enriched by Rietveld's (2009) account of unreflective action shall remain as a topic for further investigation.

A is familiar with a practice's craft, namely, cappuccinos, so she feels confident that she knows the criteria of success of how to handle this kind of situations (of referring to cappuccinos). *B* is not familiar with it, but she trusts that *A* has a better idea, and seeks to understand what this idea might be. This idea, finally, is experienced as something determinate; *this* idea is what *B* is seeking and what *A* knows.

Note that I assume that the structure of reflexion is always preceded by an experience of failure. The experience of reflexion is further divided into leader and follower. These experiences are relative to a particular word or expression and always occur inside a situation of use, and can be roughly characterized as follows:

Experience of reflexion — leader
Reflective
Familiarity and self-confidence
Assumption of determinateness
'Ought' and 'back to the basics' attitudes
'Knows' criteria of success

Experience of reflexion — follower
Reflective
No familiarity, but trust
Assumption of determinateness
'Ought' and 'back to the basics' attitudes
Seeks criteria of success

4.1.4 Literal meanings and dictionaries

Information and literal meanings

So far we have given an account of the information carried by words and expressions, but we have not yet claimed that such an account is an account of literal meaning. Information has not been equated with literal meaning.

Information and literal meaning are not the same, since the notion of information does not, on its own, help us solve our perplexity with dictionaries. Literal meanings arise in our understanding when we pause and reflect about the information carried by words, along with a feeling that *this* information is what *this* word literally means, so *this* is how this word ought to be used.

A dictionary is a tool made for some purposes, and these purposes make us conceive of dictionaries as if they were repositories of the literal meanings of words. But since dictionaries give definitions of words by making use of other words, a dictionary can only be used by someone that already has a mastery, though incomplete as it may be, of the language in which the dictionary is written. A dictionary is not a mapping from words to entities called meanings.

When we consult a dictionary we are looking for the literal meaning of a word; we are not sure what a word means, are uncertain if it means this rather than that, or want to settle what a word means in a dispute or an explanation. A dictionary is, as it were, a repository of the literal meanings of words. Such a picture of what a dictionary is depends on how and why we use a dictionary. For if we *only* used dictionaries to give a lexicographic order to words, we would not think that a dictionary is a repository of the literal meanings of words (imagine that the definitions given in the dictionary were random concatenations of words, or random associations between words and definitions).

A dictionary does not provide a random association between words and definitions. It states what definitions go with what words; it shows what information a word carries in a given language (or what information anyone, as a potential produced and comprehender, is to associate with the word if he is to produce and comprehend the language in question). Dictionaries are relevant because they show how words ought to be used.

Roles of literal meanings

To obtain an account of literal meaning I propose to pursue the following strategy. Let us agree that such an account can be given by explaining what information is carried by expressions such as "w means that . . . ," "The meaning of w is . . . ," etc. (This strategy bears some resemblance with seeking an account of the meaning of "meaning").

I have argued that one way to conceive of the information that words and expressions can carry is in terms of their roles in practices. With this account of information at hand we can paraphrase the previous strategy in the following way. An account of literal meaning can be given by explaining what role expressions such as "w means that . . . ," "The meaning of w is . . . ," etc., play in which practices.

Hence, what we are looking for is an answer to two interrelated questions: (i) in which practices do expressions such as "w means that . . . ," "The meaning of w is . . . ," etc., play a role?; (ii) what role do these expressions play in these practices?

The present strategy is based on the idea that (one way) to explain a word is to give its meaning. For instance, to look up the meaning of "meaning" in the dictionary is a way to obtain an explanation of "meaning." To be sure, we are not literally going to pick up the dictionary and look up for the word "meaning." For an account of literal meaning is presupposed by the entry "meaning" in the dictionary, but such an account is precisely what we are looking for. Nevertheless, we are relying on the idea that our use of dictionaries is (one way) to give an explanation of a word, and that this use is part of our conception of literal meanings.[15]

[15]This step is quite an involved reflexive move and I feel it can use a bit more explanation. To begin with, one does not give the meaning of "meaning" in the same way as one gives a

Definition, explanation, justification

The practices in which expressions such as "What is the meaning of w?," "w means that . . . ," "w is this, that and the like," "Because this is what w means!," etc., play a role are the practices of definition, explanation, correction, and justification. In these practices we appeal to the bond between expressions and the information they carry. But such an appeal, although intuitively so conceived, can not be explained, as it were, by pointing to the expression and then pointing to its information. For information is not a thing. What these practices do is to appeal to some previously understood sayings and/or doings to bring about a shared understanding.

We explain to a child (or correct her with regards to) how to draw a circle, and by doing so we explain to her the word "circle," by drawing a circle in a piece of paper and having her doing it after us. We explain (and define) what a check mate is in the game of chess by showing several positions in the board and saying that the king is in check and can not move. We explain (and justify) that in our way back home from the office we did not pick up the groceries we were asked to bring because we forgot our wallet at home. The math student explains (and justifies) that in an Abelian group there is only one unit by making a proof of this claim in order to pass the exam. Etc.

To be familiar with these practices requires participants to be able to recognize, carry out, prompt, and respond to p-ings, that is, to doings and sayings that are instances of explanations, definitions, corrections, and justifications (for short I will refere to these practices as *explanatory practices*). An interesting feature of the doings and sayings that belong to explanatory practices is that they also belong to other practices. When a trainer is explaining something to a trainee, she is using doings and sayings of a given practice, though in a simplified way. Explanations, definitions, justifications, and corrections are always about a doing or saying that belongs to a relevant practice. There is a purpose to explanatory practices, though general as it may be. These practices are used to seek or establish a shared understanding.

Explanatory practices require two roles (not always only one person per role). I will call one of these roles the trainee, and the other the trainer. I introduce these labels just to keep track of the different roles, and to bring to the fore the asymmetry of these roles as regards their familiarity with respect to a given practice or practices (a qualification is in order with respect to justification, see below). The gist of these roles is that when trainee and trainer are in an expe-

ticket to the bus driver. To look for the meaning of "meaning" is to explain how we conceive meanings in everyday life, that is, when we reflect about it. Part of this conception of meanings consists in that (one way) to explain a word is to give its meaning, say, by looking it up in the dictionary. Thus, not only is it legitimate to seek for an account of meanings by inquiring into the meaning of "meaning," but the process of giving a particular kind of explanation is (part of) what "meaning" means.

rience of reflexion, and they do enter in such an experience at some point in an explanatory practice, the former will be in a follower stance and the latter in a leader stance.

Take the case of a professor giving a lecture, explaining and defining the axioms of Abelian groups to a number of students. The professor might well be experiencing success within his/her flow of action, and the students might well be experiencing success too. The professor is, nevertheless, explaining and defining and the students are participating in this practice. But it is quite normal that as the lecture progresses, situations occur where a student asks questions that break the flow of unreflective action, thus brining about states of reflection. Moreover, experiences of reflection were present when the professor was preparing his/her lecture, and will (most likely) be present when the students consciously study their notes. These experiences are mediated by the sayings and doings carried out by the professor at the time of lecture, so not just any experience of reflection is allowed. The purpose of the practice is, in any case, one of seeking to establish a shared understanding between professor and students.

The case of the math student presenting and exam, where she explains and justifies that every Abelian group has only one unit, does not involve necessarily a broken flow of unreflective action, nor is the trainee unfamiliar with the practice (on the contrary, she might be even more familiar with it than the trainer). Likewise with many cases of justifications. However, the point remains that these instances seek to establish a shared understanding, and that this practice is prompted by questions by the examiners. The student might well be in an experience of reflection when understanding these questions, notwithstanding the fluent and unreflective way in which she provides answers.

Another example is the solitary use of a dictionary. Though the actual situation contains just one person, she does seek for a shared understanding. That this understanding is (or ought to be) shared with other people lies in the fact that other people created the dictionary with the purpose of establishing a shared understanding; that the user can justify her uses of words by quoting the dictionary; that other people accept that what the dictionary states as the meaning of a word is how the word ought to be used; and that the answer to the question as to how a word ought to be used can be found in the dictionary. Moreover, the user is in a state of reflection with the follower stance (and the authors of the dictionary, at the moment of deciding on the definitions of words, in a state of reflection with the leader stance).

The previous description of these practices is only a starting point and it does not aim at capturing this broad and important topic. For instance, we have not mentioned different kinds of definitions (e.g., to give necessary and sufficient conditions, to give genus and difference, implicit definitions, etc.) or different kinds of explanations (e.g., scientific, deductive, probabilistic, etc.). Though rough as this description may be, it must suffice for the time being and the purposes at hand.

The role of 'means that'

Only very rarely do we use in our everyday life expressions such as "What is the meaning of w?", "w means ...", "w does not mean ..., but ...," "a w is ...", etc. But the claim is that we use them inside practices of explanation, definition, correction, and justification.

These expressions play specific roles, which lie, as it were, at the intersection between these practices and other practices. The paradigmatic case of this intersection is when the participants are engaged in a practice and the trainee breaks the flow of unreflective action to bring about a shared understanding of a saying or a doing of this practice. But always an explanation is an explanation of a saying or doing that belongs to a practice. Likewise with definitions, corrections, and justifications.

The paradigmatic role of these expressions is to prompt a state of reflection and to make the participants of the exchange take either the trainee or the trainer role. That these promptings have effect depends on a variety of motivations on the part of the participants. Social recognition, competition, retribution, feeling of overcoming, moral and ethical reasons, etc., lie behind the motivations to explain and be explained to. It is beyond the scope of the present work to give a detailed discussion of this topic.

When considered against the background of the roles of signs defined earlier, these expressions might play some of those roles. In particular, expressions such as "What is the meaning of w?" serve to prompt the practice of explaining. Expressions such as "w means ...", "w does not mean ..., but ...," "a w is ...", etc. serve to carry out acts of explanation, definition, correction, and justification. These acts are carried out by the trainer, and require a previous understanding, though incomplete as it may be, of the practice being explained (defined, etc.). Doings and sayings of explanation (definition, etc.) get entangled with doings and sayings of the other practice. Hence, these complex expressions (with the dots filled out) carry information that is determined by the roles that some of their smaller components play in the other practice.

4.2 Links with cognitive science

Despite the fact that the starting point of the present inquiry rejects a naturalistic approach to the information carried by language—i.e., that this sort of information is a natural kind—, as well as a reductionistic approach—i.e., that the account of information, to be truly explanatory, should reconcile the information carried by language with the world as described by the natural sciences—it is possible to draw interesting connections between the present account of practice-based information and some sciences, in particular cognitive science. I should

emphasize, however, that I can only make superficial remarks about this issue and that more in-depth studies shall remain as a suggestion for future work.

According to some, language is a human-specific property. Albeit some animal species have communication systems, none of them has the features that human languages have. Moreover, in conjunction with the individualistic frame of reference—i.e., the claim that properties of language mirror properties of linguistic competence—, these premises entail that a study of language boils down to a study of some human-specific abilities.

For instance, it is not uncommon to conceive of recursion as a human-specific ability that gives rise to human-specific features of language. Compare the following quote:

> One of the oldest problems among theorists is the 'shared versus unique' distinction. Most current commentators agree that, although bees dance, birds sing, and chimpanzees grunt, these systems of communication differ qualitatively from human language. In particular, animal communication systems lack the rich expressive and open-ended power of human language (based on humans' capacity for recursion) (Hauser et al., 2002, p. 1570).

We must note upfront that the claim that recursion is a defining feature of language/linguistic competence has already been criticized in chapter 2 above.[16] Furthermore, the discussion developed in the same chapter turning around incomplete understanding challenges the individualistic frame of reference.[17] Consequently, the question arises whether language should be conceived as boiling down to human-specific abilities.

As opposed to the not uncommon line of thought expressed in the previous quote, it follows from the account of information and intelligibility developed throughout this chapter that the abilities that we humans deploy in our uses of language are not specific to us, nor does the study of language come down to the study of individual abilities. I shall address these issues in turn.

4.2.1 Human-*specific* or just *human* abilities?

As far as the abilities that we deploy in our uses of language are concerned, the goal of discovering the specific abilities that are unique to human beings and that (purportedly) give rise to language seems misguided in the present context. Why does language arise from abilities that are unique to us? Because only we, human beings, have language? Such reason can only follow from a preconception about language—one that we have not endorsed here. However, animals use signs too. The ways in which we humans use signs need not be underwritten by abilities that we have and that no other animal possesses. Most of these

[16]Especially, see §2.2.2 and Scholz and Pullum (2007); Pullum and Scholz (2010).
[17]Especially, see §2.2.3.

ways, given their complexity and entwining, might well be unique to us, but the kind of abilities deployed in the exercise of these ways might be similar to the abilities of other animal species. And, in any event, should there be abilities that only humans deploy in the use of some particular signs, these abilities do not underwrite language-use in every case; there are myriad ways in which humans use signs, and linguistic signs in particular, that require no species-specific ability.

The reason for such far-reaching claim emerges when we consider the broad range of abilities that are deployed in our uses of linguistic signs. To this effect, we should recall our previous account of action intelligibility. We have claimed that our activities are inscribed in a two-fold structure of significance that contains a teleological and an affective component. The teleological component consists of a hierarchy of purposes and projects that we entertain in a given situation; the affective component consists of a range of emotions, moods, and feelings that we entertain in a given situation.

As actions, our uses of linguistic signs are also inscribed in such a two-fold structure of significance. Hence, a given use of a linguistic sign or signs is often, but not always, addressed towards the achievement of one or several of the purposes of the hierarchy, as well as the carrying out of one or several projects thereof. It is also often, but not always, addressed to respond to some of the emotions, moods, and feelings of the situation. Hence, the abilities that underwrite our uses of language are *a fortiori* also inscribed in such a two-fold structure of significance.

Thus, for some simple purposes, to use language might come down to saying so-and-so in order for the recipient to produce a response, which brings about the achievement of the simple purpose. For instance, to have someone else give something to her (e.g., "Pass the salt"); or to evoke a particular emotion or feeling in the recipient (e.g., "Cheer up"). At such level of description, this ability is certainly shared with other animals, say dogs that bark in such-and-such a way in order for its owner to bring them food; or that moan in such-and-such a way to evoke sympathy from its owner.

If we move along the affective component of our actions, we find that some uses of language are devised to address a range of emotions. Such addressing of emotions, in some cases, is shared with other animal species, e.g., to threaten, to evoke sympathy, to arouse, etc., but in other cases such addressing seems to be uniquely human, e.g., to greet, to leave-taking, to thank, to excuse oneself, to insult, etc.

Moreover, according to Tomasello's discussion of the "human cooperative motivations for communication" (2008, §3.2.2), it seems that although using language to request something from someone is a motivation that is shared in its general lines with the intentional communicative signals of all apes, the motivations to offer help to others without even being requested and to share feelings and attitudes about things seem to be unique to the human species. Consequently, some of the abilities that underwrite the uses of linguistic signs that address these motivations

for communication are human-specific (e.g., the ability to offer help, the ability to share attitudes), but others are not (e.g., the ability to request something).

As we move from a simple purpose to a hierarchy of purposes and projects, the abilities deployed in language-use to address this hierarchy become more sophisticated, although not necessarily species-specific. For instance, a particular linguistic sign can be used with the intention for someone to pay attention to a particular object (immediate purpose) in order for her to do something with it (mediate purpose). For instance, one can say "the door" to someone in order for her to realize that she left the door open as she came into the room, so that she closes it. Amongst the abilities required to deploy this use of language are the following: (i) the ability to determine what objects a person is paying attention to and what objects she is not paying attention to; and (ii) the ability to ascribe to someone the capacity to ascribe intentions and emotions to others. Indeed, in order to deploy such a use of language one realizes that this person just came into the room and left the door open behind her: she is not paying attention to the door after she entered the room. And one ascribes to this person the capacity to recognize one's discomfort with such a state of the door and the concomitant intention to make a change in it.

Though sophisticated as these abilities are, there is evidence suggesting that great apes have abilities much similar to those, and that their uses of gestures (although not their vocalizations) require a similar deployment of abilities. Tomasello claims that:

> Recent research has demonstrated that great apes understand much about how others work as intentional, perceiving agents. Specifically, great apes understand something of the goals and perceptions of others and how these work together in individual intentional action in ways very similar to young human children (Tomasello, 2008, pp. 44ff).

Indeed, some experiments suggest that apes understand that others have perceptions (compare ability (i) above), and that others have goals (compare ability (ii) above). That apes possess such abilities leads Tomasello to describe apes' uses of (some) gestures in the following manner:

> [A]pes' attention-getting gestures emanate from the communicatorâĂŹs social intention that the recipient *see* something, which he expects, based on his intentional understanding (in combination with past experience), will most likely lead her to *do* what he wants. This creates a two-tiered intentional structure comprising the communicator's social intention, as his fundamental goal, and his "referential" intention, as a means to that goal (Tomasello, 2008, pp. 50f).

It is worth noting that, though similar as these ape's abilities are to human children's, there is a fundamental difference between them. Experimental research has shown that although chimpanzees can communicate about entities that are

present in the field of vision, only humans can communicate about absent entities (Liszkowski et al., 2009). Hence, the ability to imagine or pay attention to absent entities seems to be a human-specific ability.

Furthermore, human-specific abilities seem to be those that exploit the kind of intention that Grice studied in his analysis of communication, namely, communicative intentions. It is Tomasello's contention that it is unique to humans that their communicative actions (or some of them, which is a nuance that, *pace* Tomasello, we should introduce here) are not only intentional, but that they also display the intention to be recognized as carrying this intention.[18] For instance, when John gives Mary a brand-new CD of Norah Jones, he has not only the purpose for her to get it, listen to it and enjoy it, but also to recognize John's intention for her to do that—this is an essential part of flirting. The important point is that while this ability—i.e., the ability to display/recognize communicative intentions—can be called human-specific, it is deployed on top of other abilities that cannot be so called and that are deployed in other uses of language.

4.2.2 Going beyond the individualistic frame of reference

Considering the question how to pursue an empirical study of language that conforms to the approach developed earlier in this chapter, one important thing to note is that such a study should not reduce to, although it should combine with, an empirical study of the abilities deployed by an individual in her uses of language. In fact, given that the information carried by language is not conceived as bestowed by an individual's mind, but as bestowed on signs by their roles in everyday practices, the study of the abilities deployed in the uses of signs is only half of the story. The other half consists in the (conceptual and empirical) study of the social interactions that underwrite the uses of signs in such-and-such ways and which allow these signs to carry the information that they carry. These interactions are, to be sure, the actual practices carried out by the members of a community at a particular period of time.

In other words, the information carried by language, being a complex phenomenon that involves a whole community—more particularly, it involves the interactions amongst the members of such community—, cannot be reduced to how this phenomenon presents itself to each member. For the properties of the complex phenomenon do not mirror the properties of the individuals.

David Marr presents this characteristic of a complex phenomenon—though in a different context—by means of the following, useful analogy:

[18] My reserve to fully agree with Tomasello's contention arises from his wholehearted adoption of Grice's model of communication; see my reserves with the notion of intention featuring in such model in §2.3.

> 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—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).

The halves-of-the-story of the information carried by language—i.e., individual abilities and practices—are not independent from one another. For we would not have the practices that we have if we did not have the abilities that we have, or that we have developed in the process of carrying out, or improving on, our current practices. Conversely, and this is perhaps the most relevant connection in the present context, a description of our abilities (or at least quite a number of them) is not independent from a description of the purposes that they help achieve, the emotions that they evoke, or of the activities that they underwrite.

Consider, for example, the following list of abilities:

a. The ability to convince,
b. The ability to seduce,
c. The ability to negotiate,
d. The ability to dissuade,
e. The ability to persuade,
f. The ability to charm,
g. The ability to amuse,
h. The ability to reckon,
i. The ability to multiply,

⋮

One cannot describe the gist of these abilities—i.e., what identifies these abilities and differentiates them from other abilities—without describing, in some cases, the purposes that they achieve (e.g., to dissuade, to persuade) or, in other cases, the emotions that they evoke (e.g., to charm, to amuse). Furthermore, in some cases a description of the activity that they underwrite is also required (e.g., to reckon, to multiply). In short, to describe an ability requires to describe a purpose, an emotion, and/or an activity. Hence, a study of our human abilities requires to take into account a study of our purposes, affections, and activities.

Moreover, our purposes, emotions, and activities are made sense of against the background of our social practices. The reason for this claim is simple: the

theoretical notion of a social practice that we have taken from Schatzki (1996) boils down to the organization of activities—i.e., sayings and doings—on the basis of practical understandings, rules, and a teleoaffective structure (see §4.1 above). In other words, our purposes, emotions, and activities are organized in practices. Hence, we can systematize the kind of abilities deployed in a practice by means of the organization of a practice.

On the basis of the organization of a given practice p—consisting of (A) practical understandings, (B) rules, and (C) a teleoaffective structure—, we can systematize the *abilities deployed by any person familiar with* p in the way shown in table 4.1.

	Comprehension abilities	**Mixed abilities**	**Production abilities**
A	To recognize p-doings and p-sayings To recognize p-inputs and p-outputs	To prompt p-ings To respond to p-ings	To carry out p-ings
B	To recognize p-rules	To respond to p-rules	To quote p-rules
C	To recognize p-purposes To recognize p-emotions	To respond to p-purposes To respond to p-emotions	To suggest p-purposes To verbalize p-purposes To evoke p-emotions To verbalize p-emotions

Table 4.1: Abilities that underwrite familiarity with a practice p.

A qualification is in order: given that not every practice's organization contains components (B) and (C), and if it contains component (C) it may not require a hierarchy of purposes or a range of emotions, the previous table of abilities must be adjusted accordingly.

Now, we comprehend and produce signs on the basis of our familiarity with the roles that they play in practices. But these roles are in turn systematically related to the organizations of practices (see §4.1.2). Hence, we can also systematize the kind of abilities deployed in comprehension and production of signs by means of the organization of a practice.

The abilities that underwrite uses of signs can be derived from table 4.1. Let "w" refer to a practice, "w-ings" to acts of carrying out the practice, and "w-s" to products of the practice (if there are such). We can systematize the *abilities of language-use* in the way shown in table 4.2. Note that the same qualification as before applies here.

To bring the point home, let us examine the following examples. To begin with, recall the above-mentioned example of using the expression "the door" to have someone who has just entered the room close the door. On the basis of our previous construction of a situation of use (see §4.1.3), we should describe

	Comprehension abilities	**Mixed abilities**	**Production abilities**
A	To attribute "w-ings" To attribute "w-s"	To prompt *p*-ings by uttering "w" To respond to "w" by carrying out *p*-ings	To carry out *p*-ings (when these *p*-ings are sayings)
B	To recognize *p*-rules	To respond to *p*-rules	To quote *p*-rules
C	To recognize *p*-purposes in uses of "w" or "w-ings" To recognize *p*-emotions in uses of "w" or "w-ings"	To respond to verbalized *p*-purposes To evoke *p*-emotions by uttering "w"	To verbalize *p*-purposes To verbalize *p*-emotions

Table 4.2: Abilities that underwrite uses of signs.

a number of elements. We shall take for granted a description of the practices of politely showing one's discomfort, denoted by p_1, and the practice of closing the door, denoted by p_2. The situation of use can be described as follows: (a) the participants are the speaker and the hearer; (b) the words are, among others, "close," "the door," "please?", etc.; (c and d) the practices are p_1 and p_2 and the roles of signs therein; (e) there are a number of standards of success, namely that the purpose be achieved, that the purpose be recognized and politely postponed, that the purpose be recognized and simply ignored, etc.; (f) as a means to bring about a shared understanding the speaker has the option to complaint and make her purpose and her standard explicit (either verbally or behaviorally). Finally, since in this context "the door" is sufficiently similar to "close the door" and given that there are few reasons to the speaker's recently prompted discomfort that have to do with the door, the hearer is able to comply and close the door.[19]

As regards the abilities required to deploy such use of language we can describe the following. On the speaker's part and as far as practice p_1 is concerned we require the following abilities: to evoke feelings of discomfort; to suggest one's purpose that one's discomfort be recognized. On the hearer's part and as far as practice p_1 is concerned we require the following abilities: to recognize feelings of discomfort; to recognize someone's purpose that her discomfort be recognized.

On the speaker's part and as far as practice p_2 is concerned we require the following abilities: to prompt closings of doors by uttering "close the door". On the hearer's part and as far as practice p_2 is concerned we require the following

[19]This is a rational reconstruction of the hearer's understanding the expression "the door" as used in this situation. I do not commit to the idea that there are rules governing the use of a particular expression to achieve a particular purpose (as far as a given standard is concerned). The previous reasoning from "the door" to the conclusion that what the speaker really wanted to say is "close the door!", though it can be called a reasoning in its own right, need not be validated in terms of rules (formal or otherwise). Moreover, the hearer need not make such transition in a reflective way; it might well be an unreflective reaction on the hearer's part.

abilities: the ability to recognize purposes in uses of "close the door"; the ability to close the door; the ability to respond to "close the door" by closing the door.

These abilities are summarized in table 4.3.

	p_1: politely showing one's discomfort	p_2: closing the door
Speaker	• to evoke feelings of discomfort • to suggest one's purpose that one's discomfort be recognized	• to prompt closings of doors by uttering "close the door"
Hearer	• to recognize feelings of discomfort • to recognize someone's purpose that her discomfort be recognized	• to recognize purposes in uses of "close the door" • to close the door • to respond to "close the door" by closing the door

Table 4.3: Speaker's and hearer's abilities in the "the door" situation.

A second example is the following. Suppose a child enters a butchery to buy a particular meat-cut, say beef chuck short ribs, that his mother wants to prepare for supper. The child has been given twenty euros and has been instructed to buy as much of this meat-cut as this money affords. The child asks the butcher "How much a kilo of beef chuck short ribs?" (he has learned by heart the name of the meat-cut, but he really does not know what it is). The butcher says "Six euros;" The child answers: "Three and one third kilos, please."

From this example we can extract the following: the situation requires butchery practices, buying and selling practices, and some basic arithmetic practices, for the expressions used in the example are only intelligible against the background of such practices. Hence, the participant's abilities must be organized in terms of their familiarity with such practices. These abilities are summarized in table 4.4.

To take stock: linguistic competence—i.e., the competence to carry out and comprehend uses of linguistic signs—is underwritten by cognitive, bodily, and affective abilities, and to find out—i.e., systematize and measure—these abilities constitutes the goal of an empirical study of linguistic competence. The consequence of the foregoing reflexion is that such an empirical study builds upon a given organization of the purposes, emotions, and activities that these abilities underwrite.

The abilities that underwrite linguistic competence, despite their general characterization, are practice-specific. Therefore, they are as general or as domain-specific as their concomitant practices are. Compare the abilities to ask for a meat-cut—which are relatively general—, the abilities to reckon, multiply and divide—which are general inside literated cultures—, and the abilities to cut a particular kind of meat in such-and-such a way—which are specific to butchers,

	butchery	buying and selling	arithmetic
Child	• to prompt 'butcherings'	• to carry out 'buyings' (by requesting the price of a quantity of a desired good) • to prompt 'sellings' (by requesting a given quantity of a good at a certain price)	• to carry out basic divisions and multiplications
Butcher	• to carry out 'butcherings' • to respond to requests of 'butchering'	• to prompt 'buyings' (by offering a given quantity of a good at a certain price) • to carry out 'sellings' (by requesting a certain amount of money for a given quantity of a good)	• to carry out basic divisions and multiplications

Table 4.4: Speaker's and hearer's abilities in the "beef chuck short ribs" situation.

but nevertheless play a definitive role in the information carried by the expression "beef chuck short ribs."

Last but not least, we can ask the question: what is specific to human language as opposed to the signal systems of other animal species? Answer: we should not ask what is specific to language, but we should ask what is specific to human practices.

4.2.3 Marr's levels of explanation adapted

How can we study each ability deployed in language use, as systematized by the above-mentioned proposal?: Marr's levels of explanation of an information processing device (Marr, 1982, §1.2) can be adapted to address this issue.

Marr's proposal contends that we must distinguish three different levels of explanation, each of which "involve issues that are rather independent of the other two" (*Ibid*, p. 25). The *top level* must explain "*what* the device does and *why*" (*Ibid*, p. 22). This level deals with a description, as precise as possible, of the task carried out by the device. It is Marr's contention that this description should determine a 'computational theory', the important features of which are "(1) that it contains separate arguments about what is computed and why and (2) that the resulting operation is defined uniquely by the constraints it has to satisfy" (*Ibid*, p. 23).

What enters in the explanation at this level must 'roughly correspond' to what the plain man knows to be true at first hand about such task (*Ibid*, p. 4). In other

words, the explanation has to take into account a number of aspects of people's everyday life, where the task to be explained actually plays a role. Compare:

> Think, for example, of the international network of airline reservation computers, which performs the task of assigning flights for millions of passengers all over the world. To understand this system it is not enough to know how a modern computer works. One also has to understand a little about what aircraft are and what they do; about geography, time zones, fares, exchange rates, and connections; and something about politics, diets, and the various other aspects of human nature that happen to be relevant to this particular task (*Ibid*, p. 5).

The *middle level* corresponds to the "choice of representation for the input and output and the algorithm to be used to transform one into the other" (*Ibid*, p. 25). Marr's example deals with the task of addition. First, the choice of representation for the input and output concerns the numerical system to be used to carry out addition (e.g., decimal, binary, hexadecimal, etc.). Second, the choice of representation for the algorithm depends on which representation was chosen for the input and output, but once this latter representation is chosen, there remain different alternative algorithms to carry out the same input-output relation.

The *bottom level* corresponds to the physical implementation of the algorithm. Here, too, there are different choices of implementation for each given algorithm (e.g., one can use either a serial or a parallel hardware to run the algorithm).

These three distinct levels can be adapted to explain the abilities deployed in language-use. For reasons that will become clear later on, I shall adapt these levels to the issue at hand in inverse order.

The bottom level at which we can explain a given ability deployed in a given use of language deals with the physic-chemical substrata of the organs involved in such deployment. For example, if the ability is that of attributing "symphonys," one can study the physiological functioning of organs such as ear, brain, and eye. One might be interested in finding out how the ear and the brain perform during a person's recognition of a given symphony, in a task where a person listens to a recording and tries to classify it. It might be a substantial empirical finding that there are patterns of neural activity that occur when a person hears a symphony, as opposed to a sonata (and that these patterns are similar from person to person). But a symphony can also be recognized by its score, and then one might be interested in finding out how the eye and the brain perform during a person's recognition of a given symphony's score.

Note that we do not need to recognize necessary and sufficient conditions on physic-chemical reactions that define the ability in question. Indeed, one advantage of embracing an explanatory strategy based on Marr's levels of explanation is that though the levels must be compatible between them, they need not supervene on each other. In other words, the top and middle level, which provide

explanations of particular aspects of the ability of attributing "symphony-s," need not supervene on a unique physic-chemical reaction.[20]

Another example concerns the ability of attributing "flirt-ings." In this case one can look at the organs involved in vision and hearing, but also to the nose, the heart, the lungs, etc. All these organs might be involved in the recognition of flirting—think of when someone that you like is hitting on you and you recognize the flirting by feeling your heart's hard bumping and the butterflies in your stomach. Likewise, we do not need to recognize necessary and sufficient conditions on physic-chemical reactions that define the ability in question: you can attribute "flirt-ings" to someone flirting with someone else, or someone flirting with you that you are not attracted to, and in all these cases your ability is based on different physic-chemical reactions.

The relative autonomy between the bottom and the top and middle levels can be used to address the common claim in cognitive science circles that the meaning of a word is defined by a particular neural activity in a particular area of the brain. To begin with, these areas are usually identified by finding out the brain area that displays most activity when subjects hear or produce a word. But this area, being a statistical mean, when considering a single individual, can be activated or not in a particular use of the word—such areas might well be statistical fallacies. Moreover, given the relative autonomy between levels, if we were to find out that someone's brain does not display the same kind of activity in such particular area when she correctly understands or produces the word, we would hardly claim that she does not 'possess' the meaning of the word. For whether she correctly understands or produces the word is explained at a level other than the bottom level of brain activity.

At the middle level we face the task of representing inputs and outputs of abilities, as well as describing how inputs and outputs are related. Representing inputs and outputs is a task that, in our culture where schools and universities play a prominent role, is relatively familiar to us. Indeed, most of us have been exposed to reading tests (e.g., university qualification exams, GRE verbal, etc.) or mathematical abilities tests (e.g., university qualification exams, GRE quantitative, etc.). These tests are formal ways to represent inputs (i.e., tests with multiple-choice questions, essay questions, etc.) and outputs (answers to these tests). Tests are usually applied in somewhat controlled situations, but there are tests, such as those in experimental psychology, that are applied in as controlled a situation as possible, and where inputs and outputs have been represented as (quantitative or qualitative) variables.

[20]Marr makes this point to defend Chomsky against some critiques that do not distinguish between the levels. These critiques assert that Chomsky's theory of transformations "cannot be inverted and so cannot be made to run on a computer" (*Ibid*, p. 28). Marr's answer to this critique is that "finding algorithms by which Chomsky's theory may be implemented is a completely different endeavor from formulating the theory itself" (*Idem*).

To make this point clearer we shall explain the cognitive ability of referring to 'absent' entities (Liszkowski et al., 2009) as a relation between inputs and outputs, given a particular representation of inputs and outputs. To this effect we must analyze to some extent the reported experiment. To begin with, the purpose of the experiment is to show that prelinguistic infants, but not chimpanzees, can 'refer' to an 'absent' entity—i.e., an entity "displaced in time and space from the here and now" (*Ibid.*, p. 654).

The explanation of such ability requires a closer scrutiny of what 'refers' and 'absent' means, for they only receive a precise description in a context. Indeed, what "reference to an absent entity" means does not speak for itself—even more if the purpose is to show that a chimpanzee does not have such an ability. Thus, in this context, 'to refer' means 'to request by means of a pointing gesture'. What 'absent' means requires a bit more explanation of the experimental task.

The task is as follows—may my lack of knowledge as regards experimental psychology excuse the long quotes:

> In the current study, we confronted 12-month-old prelinguistic human infants and adult chimpanzees with two new situations in which they wanted something they could not see. In both situations, participants first repeatedly saw a human adult place several desired objects of the same kind on top of one platform, while also placing undesired objects of another kind on another, similar platform. Then, for the test, the desired objects were removed (*Ibid.*, p. 655).

An important aspect of the task is that subjects (infants/chimpanzees) should desire a number of objects—the 'desired objects', namely, toys for infants and food for chimpanzees. A platform then is made relevant for the subjects because all and only 'desired objects' are placed thereon. The extent to which the platform becomes relevant to the subjects is something to be found out once it is emptied and subjects are expected to request a 'desired object' by pointing to the platform.

It is worth noting that the target ability to be measured can be classified, in the systematization developed earlier, as a prompting of a practice, namely, to fetch an object to the requester under particular conditions. This requires that there be someone else that is able to recognize the pointing gesture as a request to fetch the object under these conditions, and that is able to fetch the object. In other words, the target ability is such that its gist depends on there being other people, in this case the experimenter, with particular abilities. The output of the target ability is then represented by the experimenter's deployment of her ability to carry out the fetching after a recognition of the proper request.

The task measures two different abilities, although they are represented by the same kind of deployment, namely, a pointing to the platform. The abilities are different because they relate different kinds of inputs to the above-mentioned output. These inputs are represented by the conditions under which the pointing occurs. In the task, there are two different conditions:

> In the *occluded-referent* condition, participants then saw the adult take another object of the desired kind and place it under its platform, out of sight. In this case, even though participants could not see the desired object, they knew it was there under the platform, and so they could potentially request it by pointing to its location (*Idem*).

In this condition, the input are: (i) the platform where 'desired objects' were usually placed; and (ii) a 'desired object' under the platform but out of sight. There is another condition:

> In the *absent-referent* condition, in contrast, after the adult removed the desired objects from the platform, she did not add any more, so that the usual location of the desired kind of objects was empty. In this case, if participants pointed to the now-empty platform, it would mean that they expected the adult would be able to infer that what they wanted was one of the missing kind of objects, that is, one of the kind both the adult and the participants knew was usually on that platform (*Idem*).

In this condition, the input are: (i) the platform where 'desired objects' were usually placed.

The results of the experiment show that most infants where able to request *the* 'desired object' in the occluded-referent condition, and most infants where able to request *a* 'desired object' in the absent-referent condition. As opposed to this, while most chimpanzees where able to request *the* 'desired object' in the occluded-referent condition, almost no chimpanzee was able to request *a* 'desired object' in the absent-referent condition. The results are summarized in the following table:

	Occluded referent	Absent referent
Infants	10/16	9/16
Chimpanzees	9/16	3/16

Therefore, infants, but not chimpanzees, have the ability to 'refer to absent entities' because they consistently deployed more pointing gestures under the absent-referent condition than chimpanzees did.

Now, Marr's definition of the middle level requires, besides a representation of input and output, a description of an algorithm that relates these representations. Though Marr's purpose is to show that compuational theory is an adequate framework to explain cognitive abilities, we need not share such far-reaching objective; we can remain neutral as regards the explanatory scope of computational theory and admit other valid ways to try and explain the relation between input and output, such as inferential statistical analysis.

The top level deals with the what and why of the abilities studied.[21] As discussed above, to describe the gist of an ability usually requires a description of a purpose, emotion, and/or activity. In turn, the latter description can benefit from a systematization in terms of a theory of practices. The level at which we describe practices is the right level at which we must describe the information carried by signs—and hence, this is also the right level at which we must describe the gist of the abilities that are deployed in the use of these signs.

However, we soon find ourselves in conflict with some of Marr's presuppositions (e.g., the computational theory of mind). Furthermore, though I have resorted to an analogy with Turing machines to try and make perspicuous my conception of practice-based information (see §4.1.2), I have also claimed that (i) such machines do not stand for (a representation of) the mind/brain, but for a collection of individuals—i.e., the Turing machine is a model of a complex system of individuals—; and (ii) such model has substantial shortcomings for the task at hand, such as explaining information dealing with emotions.

There are two separate approaches to the explanation of the what and why of abilities at the top level. One deals with an external explanation of the information that defines the gist of the abilities and the other with an internal explanation. The former kind of explanation consists in a sort of bird's eye view of the factors that usually make part of practices—the participants' required abilities, the practice's rules, and teleoaffective structure. It is an external explanation because no substantial familiarity is required with the practices involved, and hence only a very incomplete understanding of the roles of signs is required or provided. But such external perspective has the advantage of providing a somewhat uniform framework to describe a wide variety of practices.

As for an internal explanation, this requires one to take the apprentice's or the anthropologist's approach, in which a first-hand familiarity with the practices that underwrite the roles of signs is required. As discussed in chapter 2, different practices may require different degrees of initiation in order to understand what they are all about—compare soccer and reading. But clearly, such approach requires to take just a few practices at a time and hence the bird's eye view is almost completely lost.

Last but not least, these two approaches—i.e., external and internal—must be treated in coordination with one another. For a given practice might well be studied in its first instances on the basis of a general theory; and conversely a

[21] Marr contends that this level accounts for constraints that should uniquely define an operation. However, requiring such constraints is far too restrictive. For even addition cannot be uniquely defined by means of axioms—cf. non-standard arithmetics—, let alone the axioms proposed by Marr (see Marr, 1982, p. 23)—that is, the axioms of commutativity, associativity and inverses, which Marr claims to uniquely define addition, are valid for multiplication too. On the other hand, we can agree with a description of general constraints or characteristics that constrain to a reasonable degree what the operation that is to be explained at the top level is all about.

general theory does not arise out of the blue, but by reflecting on the similarities and differences among already first-hand-familiar practices.

***

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 picture of linguistic information requires a radically different account of language—that is, as an open-ended collection of signs that appear in patterned ways and that play a role in our practices[22]—, linguistic competence—that is, as an embodied and embedded ability to achieve purposes with speech and writing[23]—, and linguistic communication—that is, as communicative actions the success of which depends on experiences of success and achievements of purposes. To be sure, when looking at the present proposal in hindsight, it seems that it rises more questions than it provides answers. This should not be seen as a principled shortcoming. Though rough and general as this proposal may be at this stage, I believe 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 detailed development of some aspects of these large topics shall remain as a suggestion for future work.

[22]By an *open-ended collection* I mean that no totality of things is recognized, which must either belong or not (or belong to a certain degree) to such a collection. That is, the actual extension of an open-ended collection is not a relevant matter. By *patterned ways* to use signs I mean that signs appear usually along with other signs, and that patterns of use can be discerned in a statistical fashion in a corpus of data; but there need not be any commitment as to the actual existence of these statistical patterns in the mind/brain of the speakers whose speech/writing belongs to such corpus.

[23]By *embodied* ability I mean an ability that requires exercise of the body, that can be trained, and that instantiates different levels of capability in different people in virtue of the properties of their bodies, such as playing the piano, dancing, etc. By *embedded* ability I mean an ability that is internally related to a broader framework of social practices; that is to say, an ability that only exists, and can only be understood, in the way it connects with such broader framework.

Final comments

In the remaining of the present work I would like to sum up some of the main topics that have concerned us here, and to briefly expose some consequences of the position I have argued for along the previous chapters. Also, I would like to summarize and take stock of the open issues for future research that have been raised along the road.

Main topics

The issue that entails perhaps the deepest disagreement between mainstream theories in semantics and my own approach concerns the attitude towards the 'individualistic frame of reference', viz., the presupposition that the properties of language mirror the properties of individual speakers. Semanticists that, in one form or another, subscribe to a psychologist explanation of language make the presupposition of the 'individualistic frame of reference'. As opposed to this attitude, the account propounded here starts out from a framework in which a single individual's properties are but a part of the story, which must be complemented with other individuals and the interactions among them—i.e., social practices. One of the main claims made here is that to the extent that the properties of the interwoven nexus of social practices go beyond the properties of individual speakers, the properties of the information carried by language cannot mirror the properties of individual speakers.

Another crucial disagreement concerns the sort of 'naturalization' presupposed by mainstream theories in semantics. Such naturalization runs together two philosophical attitudes, namely, *physicalism*—i.e., "the thesis that everything is physical, or as contemporary philosophers sometimes put it, that everything supervenes on, or is necessitated by, the physical" Stoljar (2009)—and *explanatory reductionism*—i.e., the thesis that "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" (*Idem*). The sort of naturalization that I attribute to mainstream theories, and which I reject, consists in the idea that any answer to the issues how signs are meaningful and what meaning they actually have, must be given in terms of a formal, mechanical theory, which somehow supervenes on some sort of pattern of brain activity. No other answer is acceptable if it is to be in accordance with the standards of rigor of science. As opposed to this attitude, I presuppose that an account of linguistic information is not in the business of making claims as to the constituents of physical reality; an explanation as to how signs are meaningful and what meaning they actually have can be given in non-physicalistic terms. Rather, an organization of our descriptions of our phenomenological experiences of language-use are just what we need to enhance our understanding of such issues. To be sure, this answer presupposes a particular ontology, to which I will come back in a moment.

The rejection of the sort of naturalism of mainstream theories in semantics is motivated by the conviction that the phenomenon of language, as such, arises out of our experiences of our uses of signs, our reactions to these experiences, and the interactions among people that they give rise to. Language, meaning, and understanding, are not natural kinds, but symbolic ones. Thus, the criteria of adequacy that I set as a measuring-rod amounts to a demand to preserve our descriptions of such experiences, so as to preserve the phenomenon from an artificial distortion produced by our tools brought to studying it.

Throughout the criticisms, based on our descriptions of language-use, of the notion of semantic competence as knowledge of a set of rules, we saw that our abilities to understand and produce signs are not independent from the characteristics of these signs, and that abstracting away from 'limitation factors', as mainstream theories do, always produces a significant departure from our descriptions of our experiences of language-use. As against this conception of semantic competence, I propose that to understand an expression is not to enter in an ideal epistemic relation with an entity that is intrinsically independent from the means used to express it. Neither is linguistic competence an abstract, 'implementation-free' kind of software. Rather, the required model of linguistic competence that seems more appropriate to these descriptions is an embodied ability to use signs to achieve innate, as well as socially shaped, purposes. To take the embodied and embedded nature of linguistic competence seriously allows us to make sense of the ubiquitous phenomenon of incomplete understanding, and that our exchanges are successful despite the incomplete, and uneven, understandings of the participants.

Experiences of language-use and our reactions to these experiences partly underwrite the information carried by many signs in our everyday practices. When these practices are taken into account, it is possible to show *how* many signs become meaningful. However, an explanation as to what information they carry is only accessible to those who are familiar with the practices that bestow meaning on these signs—but then again, no further understanding can be gained by a merely theoretical account. The embodied and embedded ability that linguistic

competence consists in clearly comes in degrees. Some speakers, in virtue of their familiarity with certain practices, are more competent with certain expressions than other speakers, who are, as it were, novices or laymen as regards these practices. The ubiquity of this situation entails that the study of language must not start from a notion of 'full' linguistic competence, on top of which an account of linguistic information and linguistic communication must be conceived.

The notion of practice-based information—i.e., the information carried by signs in virtue of the roles that they play in our everyday practices—has consequences for two of the open issues raised in chapter one, namely, the rejection of an instrumentalist view of formal semantics, and the assessment of contextualism.

According to the instrumentalist view, the interpreted formal languages put forth by the semanticist are merely theoretical tools for classifying, systematizing and predicting semantic intuitions (e.g., truth conditions, validity of certain inferences, etc.). Such semantic intuitions are taken to constitute the domain of study of theories dealing with the semantics of natural language. But if we take the notion of practice-based information seriously, as well as the concomitant notion of incomplete understanding of such information, we can see that the claim that the domain of semantics consists in individual intuitions is a misguided supposition. For the intuitions of an individual provide access but to one aspect of some practices, namely, to the introspectable experiences of the practices that she is familiar with. These experiences, however, are different from speaker to speaker, and this situation makes it difficult to make sense of a domain of semantics that is accessible for scientific research. Such difference must not be concealed behind the claim that a common core of these experiences must exists; for such claim represents an ungrounded assertion, which must be substantiated by a serious empirical research. Moreover, the embodied abilities that underwrite language-use are not merely different because they are based on different histories: they are also different in degree, just as someone is more capable to play the piano than someone else. But more importantly, the supposition of intuitions as the domain of semantics cannot account for the roles of signs in our practices, for such roles are not constituted by the experiences of a single speaker, just as buying a beer at a certain price is not constituted by the buyer's experiences. A proper explanation of practice-based information, which I take to permeate our uses of language, requires a broader framework than the mere experiences of a single individual. To sum up, to classify, systematize and predict intuitions cannot constitute a legitimate study of semantics, given that the target of explanation of semantics must be the information carried by words, and the account of such information requires a broader framework than the mere experiences of a single individual.

Similar objections against Recanati's contextualism can be raised. Recall that the pillar of his critiques is the availability assumption, according to which what is said must be intuitively accessible to the conversational participants (unless something goes wrong and they do not count as 'normal interpreters'). The notion of a normal speaker is completely artificial, and is dictated by the ability to

intuitively have access to what is said. This supposition, too, reduces the domain of semantics to the intuitions of individual speakers; hence, it brings to the party all the above-mentioned problems with such reduction. Furthermore, although Recanati's contextualism explains why a word has different meanings in different contexts, it does not explain how these various meanings nevertheless remain constant across a range of contexts. These contexts must be characterized in terms of the practices that bestow meaning on these words, and the identification of these practices constitutes the so-called 'primary pragmatic processes'. Last but not least, since Recanati works inside a Gricean framework, the notion of communication against which language-use is conceived must be rejected. Linguistic communication does not consists in the process of recognition of communicative intentions. For communication might well be successful between participants with incomplete, and uneven understanding of both the purposes of the exchange, as well as of the proper use of the expressions used therein; and hence their mental states cannot define such purposes or such proper use (cf. the example of the cappuccino).

Open issues

Ontology

An account of practice-based information is not in the business of making claims as to the constituents of physical reality. However, such account presupposes an ontology of practices. In my view, we can explain this ontology in physicalistic terms; however, such explanation does not become an ultimate explanation of practices or practice-based information. It merely shows the apparatus that gives rise to the experiences, reactions, interactions, and physical objects that allow for these practices to take place. It is beyond the scope of the present work to delve into this complicated issue. All I can attempt to do here is to draw the outline of a possible account of the relation between practices and such apparatus.

The gist of the attempt is to use a similar strategy as the account of the mind/brain dualism in terms of the analogy with the software/hardware description. In this case, however, there is no mind, but a practice, and there is no one brain, but several bodies. The apparatus that allows for our practices to take place is the analog of the hardware. Our bodies moving around, acting on things and on the bodies of others are like the circuits of a hardware, or the wheels and gears of a machine. They are physical objects and their movements are bound by physical laws. But our practices and the practice-based information they give rise to are the analog of the software. They run on the machine that is constituted by the hardware, but they are different from it.

To assume a shared and determinate theme in communication

Another open issue raised along the road is the nature of the assumption of a shared and determinate theme in communication. When we are engaged in linguistic communication with someone, and when the exchange is successful, we experience that we share a theme with our interlocutor. For instance, our experiences of language-use usually contain images (e.g., of objects, situations, etc.) as well as an assumption of determinateness of the subject matter that is under discussion in the situation of use. But such experience of a determinate subject matter is not (just) a visual experience. For instance, when we think about words such as "leaf," or "green," we have an experience that goes beyond a mere image of a leaf or a red patch: we also experience these images as 'schemas'. The most promising line of inquiry into our experiences of a shared and determinate theme consists, in my view, in making an exegesis of Wittgenstein's later work in the light of my account of information as a complex phenomenon. We can shed some light on this topic by considering the way in which Wittgenstein explores the experience of a definition by means of samples in his *Philosophical Investigations*. Paragraph 73 starts like this:

> When someone defines the names of colours for me by pointing to samples and saying "This colour is called 'blue', this 'green' . . . " this case may be compared in many respects to putting a table in my hands, with the words written under the colour-samples.

From this passage I would like to focus on the analogy of stating a word's meaning with using a table that matches words with color samples. And from this analogy I would like to focus on the feeling, suggested by the table of colors, that the meaning of a word is something definite, namely, the relation between the name and the color sample. The text continues:

> One is now inclined to extend the comparison: to have understood the definition means to have in one's mind an idea of the thing defined, and that is a sample or [image].[24] So if I am shewn various different leaves and told "This is called a 'leaf' ", I get an idea of the shape of a leaf, an [image] of it in my mind.

This feeling of definiteness comes along with an image. When one hears or uses the word "leaf" one usually has a visual experience. The same goes for the word "green" and in fact most words bring about such experience—even those words that do not have physical referents (think of the words "liberty," "democracy," etc.). In the case of, say, the word "leaf" the visual experience may present us

[24] I shall use "image" instead of the term "picture," found in the English translation that I used, viz., Wittgenstein (1954).

with a sharp image of a leaf. But our experience of the use of the word "leaf" goes beyond this visual experience. The leaf is experienced as a schema. In §74 in the text we find the following explanation:

> Here also belongs the idea that if you see this leaf as a sample of 'leaf shape in general' you *see* it differently from someone who regards it as, say, a sample of this particular shape.

Such 'seeing' is not having a visual experience. Though the sense of determinateness is nicely illustrated by the table analogy, which emphasizes the sort of visual experience that comes along with such 'seeing', there is more to it than meets the eye. For 'seeing' something as a schema is more than seeing it as a sample of a particular thing; it is internally related to the practice of using samples. The text continues:

> Now, this might well be so—though it is not so—for it would only be to say that, as a matter of experience, if you *see* the leaf in a particular way, you use it in such-and-such a way or according to such-and-such rules.

This point is also stated in §73 in the following way:

> [F]or such a schema to be understood as a *schema*, and not as the shape of a particular leaf, and for a slip of pure green to be understood as a sample of all that is greenish and not as a sample of pure green—this in turn resides in the way the samples are used.

The thread of ideas goes from the explanation of the *experience* of a definition to the explanation of the *uses* of samples. But to explain such uses one needs to move up to an altogether different level from experiences, namely, the level of practices. Hence, the explanation is finished by describing practices in which the uses of samples play a role. Consider, for instance:

> [T]here is a variety of cases in which we should say that a sign in the game was the name of a square of such-and-such a colour. We should say so if, for instance, we knew that the people who used the language were taught the use of the signs in such-and-such a way. Or if it were set down in writing, say in the form of a table, that this element corresponded to this sign, and if the table were used in teaching the language and were appealed to in certain disputed cases.
>
> We can also imagine such a table's being a tool in the use of the language. Describing a complex is then done like this: the person who describes the complex has a table with him and looks up each element of the complex in it and passes from this to the sign (and the one who is given the description may also use a table to translate it into a picture of coloured squares). This table might be said to take over here the role of memory and association in other cases. (We do not usually carry out the order "Bring me a red

> flower" by looking up the colour red in a table of colours and then bringing a flower of the colour that we find in the table; but when it is a question of choosing or mixing a particular shade of red, we do sometimes make use of a sample or table.) (Wittgenstein, 1954, §53).

I believe this is a promising route of understanding Wittgenstein's texts, as well as gaining a substantial knowledge on our experiences of language-use. But of course this route shall remain as a topic for future research

Normativity

Normativity plays an implicit role at several places in my account: the notion of incomplete understanding presupposes a notion of normativity as regards understanding; practices presuppose a notion of normativity as regards our doings and sayings; explanatory practices presuppose a notion of normativity as regards explanations, justifications, definitions, etc. Moreover, given the prominent place of discussions of normativity in semantics, the present work owes an attempt to shed a different light on the notion of semantic normativity. Such attempt, however, shall remain as a topic for future research.

Bibliography

Andrade-Lotero, E. and Dutilh-Novaes, C. (To appear). A contentious trinity: Levels of entailment in Brandom's pragmatist inferentialism. To appear in *Philosophia*.

Bach, K. (2001). You don't say? *Synthese*, 128(1/2):15–44.

Barber, A. (2009). Idiolects. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Spring 2009 edition.

Barker-Plummer, D. (2009). Turing machines. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Spring 2009 edition.

Barlow, M. and Kemmer, S., editors (2000). *Usage Based Models of Language*. The University of Chicago Press, Chicago.

Bloom, P. (2000). *How Children Learn the Meanings of Words*. MIT Press, Cambridge, Mass.

Borg, E. (2004). *Minimal Semantics*. Oxford University Press, Oxford.

Borges J. L. (1999). Ramon LlullâĂŹs Thinking Machine. In Weinberger, E., editor, trans. Allen, E. Levine, S. J., and Weinberger, E., *The total library: non-fiction 1922–1986*, pages 155–60. Penguin, London.

Brandom, R. B. (1994). *Making it Explicit: Reasoning, Representing, and Discursive Commitment*. Harvard University Press, Cambridge, Mass.

Brandom, R. B. (2001). *Articulating Reasons: An introduction to inferentialism*. Harvard University Press, Cambridge, Mass.

Brandom, R. B. (2008). *Between saying and doing. Towards an Analytic Pragmatism*. Oxford University Press, Oxford.

Braun, D. (2008). Indexicals. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Fall 2008 edition.

Brown, J. and Cappelen, H., editors (2010). *Essays on Assertion*. Oxford University Press, Oxford.

Cappelen, H. and Lepore, E. (2005a). *Insensitive Semantics: A Defense of Minimalism and Speech Act Pluralism*. Blackwell, Malden, Mass.

Cappelen, H. and Lepore, E. (2005b). A tall tale: In defense of semantic minimalism and speech act pluralism. In Preyer, G. and Peter, G., editors, *Contextualism in Philosophy: Knowledge, Meaning, and Truth*, pages 197–219. Oxford University Press, Oxford.

Carston, R. (2002). *Thoughts and Utterances*. Blackwell, Oxford.

Chierchia, G. and McConnell-Ginet, S. (2000). *Meaning and Grammar*. MIT Press, Cambridge, Mass., 2nd edition.

Chomsky, N. (1959). A review of B. F. Skinner's Verbal Behavior. *Language*, 35(1):26–58.

Chomsky, N. (1965). *Aspects of the Theory of Syntax*. MIT Press, Cambridge, Mass.

Chomsky, N. (1986). *Knowledge of Language*. Praeger, New York.

Chomsky, N. (1995). Language and nature. *Mind*, 104(413):1–61.

Cowie, F. (2010). Innateness and language. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Summer 2010 edition.

Davidson, D. (1965). Theories of meaning and learnable languages. In Hillel, Y. B., editor, *Logic, Methodology and Philosophy of Science, Proc. of the 1964 International Congress*, Amsterdam. North Holland. Reprinted in Davidson (1984b):3–15.

Davidson, D. (1967). Truth and meaning. *Synthese*, 17:304–323. Reprinted in Davidson (1984b):17–36.

Davidson, D. (1973). Radical interpretation. *Dialectica*, 27:313–28. Reprinted in Davidson (1984b):125–39.

Davidson, D. (1974). Belief and the basis of meaning. *Synthese*, 27:309–23. Reprinted in Davidson (1984b):141–54.

Davidson, D. (1979). Moods and performances. In Margalit, A., editor, *Meaning and Use*, pages 9–20. Reidel Publishing Company, Dordrecht. Reprinted in Davidson (1984b):109–121.

Davidson, D. (1984a). Communication and convention. In *Inquiries into Truth and Interpretation*, pages 265–80. Clarendon Press, Oxford.

Davidson, D. (1984b). *Inquiries into Truth and Interpretation*. Clarendon Press, Oxford.

Davidson, D. (1986). A nice derangements of epitaphs. In LePore, E., editor, *Truth and Interpretation: Perspectives on the Philosophy of Donald Davidson*, pages 433–446. Basil Blackwell, Oxford.

de Swart, H. (1998). *Introduction to Natural Language Semantics*. Number 80. CSLI Lecture notes, Stanford.

Dekker, P. and van Rooij, R. (2000). Bi-directional optimality theory: An application of game theory. *Journal of Semantics*, 17:217–42.

Donnellan, K. (1966). Reference and definite descriptions. *Philosophical Review*, 77:281–304.

Dowty, D., Wall, R., and Peters, S. (1981). *Introduction to Montague Semantics*. Reidel Publishing Company, Dordrecht, Boston and London.

Dummett, M. (1978). *Truth and other Enigmas*. Duckworth, London.

Dummett, M. (1993). *The Seas of Language*. Oxford University Press, Oxford.

Fitz, H. (2009). *Neural Syntax*. PhD thesis, University of Amsterdam.

Fodor, J. and Phylyshyn, Z. (1988). Connectionism and cognitive architecture. *Cognition*, 28:3–71.

Franke, M. (2009). *Signal to Act: Game Theory in Pragmatics*. PhD thesis, University of Amsterdam.

Frege, G. (1948). On sense and reference. *The philosophical review*, 57(3):209–230.

Gamut, L. (1991). *Logic, Language and Meaning*, volume 1 and 2. The University of Chicago Press, Chicago.

Goldberg, A. (1995). *Constructions: A Construction Grammar Approach to Argument Structure*. The University of Chicago Press, Chicago.

Goldberg, A. (2006). *Constructions at Work: The Nature of Generalization in Language*. Oxford University Press, Oxford.

Grice, H. (1957). Meaning. *The Philosophical Review*, 66(3):377–388.

Grice, H. (1969). Utterer's meaning and intention. *The Philosophical Review*, 78(2):147–177.

Grice, H. (1975). Logic and Conversation. In Cole, P. and Morgan, J., editors, *Syntax and Semantics*, volume 3. Academic Press, New York.

Grice, H. (1989). *Studies in the way of words*. Harvard University Press, Cabridge, Mass.

Groenendijk, J. and Stokhof, M. (1991). Dynamic predicate logic. *Linguistics and Philosophy*, 14(1):39–100.

Groenendijk, J. and Stokhof, M. (1999). Meaning in motion. In von Heusinger, K. and Egli, U., editors, *Reference and Anaphoric Relations*, pages 47–76. Kluwer, Dordrecht.

Groenendijk, J. and Stokhof, M. (2005). Why compositionality? In Carlson, G. and Pelletier, J., editors, *Reference and Quantification: The Partee Effect*, pages 83–106. CSLI Press, Stanford.

Hauser, M., Chomsky, N., and Tecumseh-Fitch, W. (2002). The faculty of language: What is it, who has it, and how did it evolve? *Science*, 298:1569–1579.

Heim, I. and Kratzer, A. (1998). *Semantics in Generative Grammar*. Blackwell, Malden, Mass.

Hintikka, J. (1962). *Knowledge and Belief*. Cornell University Press, Ithaca.

Hodges, W. (2001). Formal features of compositionality. *Journal of Logic, Language, and Information*, 10:7–28.

Jackendoff, R. (1987). *Consciousness and the Computational Mind*. MIT Press, Cambridge, Mass.

Janssen, T. M. (1997). Compositionality. In van Benthem, J. and ter Meulen, A., editors, *Handbook of Logic and Language*, pages 115–136. Elsevier/MIT Press, Amsterdam/Cambridge.

Kamp, H. and Reyle, U. (1993). *From Discourse to Logic, Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Kluer Academic Publishers, Dordrecht.

Kamp, H. and Stokhof, M. (2008). Information in natural language. In Adriaans, P. and van Benthem, J., editors, *Handbook of the Philosophy of Information*, pages 49–112. Elsevier, Amsterdam.

Kaplan, D. (1989). Demonstratives. In Almog, J., Perry, J., and Wettstein, H., editors, *Themes from Kaplan*, pages 481–564. Oxford University Press, Oxford.

Karlsson, F. (2010). Recursion and iteration. In van der Hulst, H., editor, *Recursion and Huma Language*, pages 43–68. Walter de Gruyter, Göttingen.

Katz, J. and Fodor, J. (1963). The structure of a semantic theory. *Language*, 39:170–210.

Kazmi and Pelletier (1998). Is compositionality formally vacuous? *Linguistics and Philosophy*, 21:629–633.

Kemmerling, A. (1993). The philosophical significance of a shared language. In Stoecker, R., editor, *Reflecting Davidson: Donald Davidson responding to an international forum of philosophers*, pages 85–116. de Gruyter, Berlin.

Lappin, S. and Zadrozny, W. (2000). Compositionality, synonymy, and the systematic representation of meaning. In Proceedings of CoRR.

Lepore, E. and Fodor, J. (2001). Brandom's burdens: Compositionality and inferentialism. *Philosophy and Phenomenological Research*, 63(2):465–481.

Levin, J. (2010). Functionalism. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Summer 2010 edition.

Levinson, S. C. (1983). *Pragmatics*. Cambridge University Press, Cambridge.

Levinson, S. C. (2000). *Presumptive Meanings*. MIT Press, Cambridge, Mass.

Lewis, D. (1970). General semantics. *synthese*, 22(1):18–67.

Liszkowski, U., Schafer, M., Carpenter, M., and Tomasello, M. (2009). Prelinguistic infants, but not chimpanzees, communicate about absent entities. *Psychological Science*, 20(5):654–660.

Ludlow, P. (2009). Descriptions. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Spring 2009 edition.

Mancosu, P. (2011). Explanation in mathematics. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Summer 2011 edition.

Marr, D. (2010/1982). *Vision: A computational investigation into the human representation and processing of visual information*. MIT Press, Cambridge, Mass.

McDowell, J. (1980). Meaning, communication, and knowledge. In van Straaten, Z., editor, *Philosophical Subjects: Essays on the Work of P. F. Strawson*, pages 117–139. Clarendon Press, Oxford.

Montague, R. (1974a). Pragmatics. In Thomason, R. H., editor, *Formal Philosophy: Selected papers of Richard Montague*, pages 95–117. Yale University Press, New Haven and London.

Montague, R. (1974b). Universal grammar. In Thomason, R. H., editor, *Formal Philosophy: Selected papers of Richard Montague*, pages 222–246. Yale University Press, New Haven and London.

Morris, C. (1938). *Foundations of the Theory of Signs*. University of Chicago Press, Chicago.

Neale, S. (1992). Paul Grice and the philosophy of language. *Linguistics and Philosophy*, 15:509–559.

Pagin, P. (2008a). Assertion. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Fall 2008 edition.

Pagin, P. (2008b). What is communicative success? *Canadian Journal of Philosophy*, 38(1):85–116.

Partee, B. (1984a). Compositionality. In Landman, F. and Veltman, F., editors, *Varieties of Formal Semantics*, pages 281–311. Foris, Dordrecht.

Partee, B. (1984b). Nominal and temporal anaphora. *Linguistics and Philosophy*, 7:243–286.

Penco, C. (2008). Keeping track of individuals: BrandomâĂŹs analysis of kripkeâĂŹs puzzle and the content of belief. In Stekeler-Weithofer, P., editor, *The Pragmatics of Making it Explicit*, pages 163–187. John Benjamins Publishing Company, Amsterdam.

Peregrin, J. (2008). The nature of meaning: Brandom versus Chomsky. In Stekeler-Weithofer, P., editor, *The Pragmatics of Making it Explicit*, pages 35–52. John Benjamins Publishing Company, Amsterdam.

Pullum, G. (2007). The evolution of model-theoretic frameworks in linguistics. In Rogers, J. and Kepser, S., editors, *Model-Theoretic Syntax at 10th proceedings of the MTS-10 workshop*, pages 1–10. Trinity College Dublin, Dublin, Ireland.

Pullum, G. and Scholz, B. (2002). Empirical assessment of stimulus poverty arguments. *The Linguistic Review*, 19:9–50.

Pullum, G. and Scholz, B. (2010). Recursion and the infinity claim. In van der Hulst, H., editor, *Recursion and Huma Language*, pages 113–138. Walter de Gruyter, Göttingen.

Rast, E. H. (2006). *Reference and Indexicality*. PhD thesis, Roskilde University.

Recanati, F. (2004). *Literal Meaning*. Cambridge University Press, Cambridge.

Recanati, F. (2005). Literalism and Contextualism: Some Varieties. In Preyer, G. and Peter, G., editors, *Contextualism in Philosophy: Knowledge, Meaning, and Truth*, pages 171–196. Oxford University Press, Oxford.

Rietveld, E. (2008). Situated normativity: The normative aspect of embodied cognition in unreflective action. *Mind*, 117:973–1001.

Rietveld, E. (2009). *Unreflective Action*. PhD thesis, Universiteit van Amsterdam.

Salmon, N. U. (1982). *Reference and Essence*. Basil Blackwell, Oxford.

Scharp, K. A. (2003). Communication and content: Circumstances and consequences of the Habermas-Brandom debate. *International Journal of Philosophical Studies*, 11:43–61.

Schatzki, T. (1996). *Social Practices: A Wittgensteinian approach to human activity and the social*. Cambridge University Press, Cambridge.

Schatzki, T. (2002). *The Site of the Social: a philosophical account of the constitution of social life and change*. The Pennsylvania State University Press, University Park.

Schiffer, S. (2006). Two Perspectives on Knowledge of Language. *Philosophical Issues*, 16:275–287.

Scholz, B. and Pullum, G. (2007). Systematicity and natural language syntax. *Croatian Journal of Philosophy*, 21:375–402.

Searle, J. (1969). *Speech Acts: An Essay in the Philosophy of Language*. Cambridge University Press, Cambridge.

Searle, J. (1995). *The Construction of Social Reality*. Free Press, New York.

Searle, J. (2010). *Making the Social World: The structure of human civilization*. Oxford University Press, Oxford.

Simmons, G. (1993). A tradeoff between compositionality and complexity in the semantics of dimensional adjectives. In *EACL '93 Proceedings of the sixth conference on European chapter of the Association for Computational Linguistics*, pages 348–357.

Soames, S. (2010). *What is meaning?* Princeton University Press, Princeton and Oxford.

Speaks, J. (2010). Theories of meaning. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Spring 2010 edition.

Sperber, D. and Wilson, D. (1986). *Relevance: Communication and Cognition*. Blackwell Publishing, Oxford.

Stalnaker, R. (1987). *Inquiry*. The MIT Press, Cambridge, Mass.

Stalnaker, R. (1998). On the representation of context. *Journal of Logic, Language, and Information*, 7:3–19.

Stalnaker, R. (1999a). *Context and Content: Essays on Intentionality in Speech and Thought*. Oxford University Press, Oxford.

Stalnaker, R. C. (1999b). Pragmatics. In *Context and Content: Essays on Intentionality in Speech and Thought*, pages 31–46. Oxford University Press, Oxford.

Stein, H. (1997). *The Fiber and the Fabric: An inquiry into Wittgenstein's views on rule-following and linguistic normativity*. PhD thesis, Universiteit van Amsterdam.

Stenning, K. and van Lambalgen, M. (2008). *Human Reasoning and Cognitive Science*. MIT Press, Cambridge, Mass.

Stokhof, M. (2002a). Meaning, interpretation and semantics. In Barker-Plummer, D., Beaver, D., and van Benthem, J., editors, *Words, Proofs, and Diagrams*, pages 217–240. CSLI Press, Stanford.

Stokhof, M. (2002b). *World and Life as One: Ethics and ontology in Wittgenstein's early thought*. Stanford University Press, Stanford.

Stokhof, M. and van Lambalgen, M. (To appear). Abstractions and idealisations: The construction of modern linguistics. To appear in *Theoretical linguistics*.

Stoljar, D. (2009). Physicalism. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Fall 2009 edition.

Thomason, R. H. (1974). Introduction. In Thomason, R. H., editor, *Formal Philosophy: Selected papers of Richard Montague*, pages 1–70. Yale University Press, New Haven and London.

Tomasello, M. (2003). *Constructing a Language: A Usage-based Theory of Language Acquisition*. Harvard University Press, Cambridge, Mass.

Tomasello, M. (2008). *Origins of Human Communication*. MIT Press, Cambridge, Mass.

Travis., C. (2008). *Occasion-Sensitivity: Selected essays*. Oxford University Press, Oxford.

Turner, J., editor (2001). *Handbook of Sociological Theory*. Springer, New York.

van Rooij, R. (2009). Optimality-theoretic and game-theoretic approaches to implicature. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Spring 2009 edition edition.

Verhagen, A. (2010). What do you think is the proper place of recursion? conceptual and empirical issues. In van der Hulst, H., editor, *Recursion and Huma Language*, pages 93–111. Walter de Gruyter, Göttingen.

Westerståhl, D. (1998). On mathematical proofs of the vacuity of compositionality. *Linguistics and Philosophy*, 21:635–643.

Williamson, T. (2000). *Knowledge and its limits*. Oxford University Press, Oxford.

Wittgenstein, L. (1954). *Philosophical Investigations*. Blackwell, Oxford.

Zadrozny, W. (1995). From compositional to systematic semantics. *Linguistics and Philosophy*, 17:329–342.

Samenvatting

Deze scriptie heeft betrekking op twee modellen van taalkundige informatie. De scriptie richt zich niet op het vaststellen van de formele (of technische) eigenschappen van deze modellen, maar onderzoekt hun filosofische vooronderstellingen. Eén van deze modellen wordt geleverd door de discipline die bekend staat als de formele semantiek; de ander is gebaseerd op een specifiek onderzoek naar de rol van tekens in onze gebruiken. In deze scriptie wordt beargumenteerd dat het tweede, en niet het eerste model ons voorziet van veelbelovende middelen die van pas komen bij de beeldvorming van een representatief fragment van de informatie gedragen door taal.

Het belangrijkste criterium dat ik gebruik om deze scriptie te onderbouwen is het volgende: ik stel als voorwaarde dat ieder taalkundig model een beschrijving van ons gebruik van tekens in het algemeen, en taal in het bijzonder, in het dagelijks leven moet bevatten. Aan de hand van dit criterium beoordeel ik de formele semantiek op basis van twee argumenten: 'de casus van regels van taal' en 'de casus van onvolledig begrip'. Deze argumenten tonen aan dat het model van de formele semantiek niet onze beschrijving van taalgebruik in het dagelijks leven bevat.

Om vervolgens mijn alternatieve, praktijk-gebaseerde model te introduceren doe ik beroep op de volgende manier van het conceptualiseren van informatie: waar staat een 10 euro biljet voor? En als we erin slagen vast te stellen waar het voor staat, zou de relatie tussen het biljet en deze mysterieuze referent verklaren op welke manier het biljet voor ons van belang is? Om deze valkuil te vermijden ga ik ervan uit dat een 10 euro biljet alleen betekenis heeft door de rol dat het speelt onze dagelijkse transacties. Het kan bijvoorbeeld worden gebruikt om een cappuccino te betalen, het kan het wisselgeld zijn na het kopen van een biertje, het kan het bedrag zijn dat een kind iedere maand in zijn spaarpot stopt, etc. Kortom, de rol van tekens in onze dagelijkse gebruiken verklaart veel van onze concepten.

Ik ben van mening dat een semantische theorie succesvol gebruik kan maken van de volgende elementen: (a) een theorie van gebruiken, ik zal in het bijzonder gebruik maken van Schatzki's theorie over sociale gebruiken; (b) een verklaring van de rol van woorden en uitdrukkingen in onze gebruiken, welke kan worden afgeleid van de hierboven genoemde theorie van gebruiken; (c) een verklaring van hoe deze rol het vermogen van de spreker om woorden te gebruiken en produceren onderschrijft; en (d) een verklaring van letterlijke betekenissen.

Als mijn argumentatie klopt, wordt aangetoond dat taalkundige informatie niet kan worden uitgelegd zonder rekening te houden met het concept van een 'gebruik'. Het staat vast dat zo'n beeld een radicaal andere opvatting van taal, taalkundige competentie en taalkundige communicatie vereist, maar ik ben van mening dat deze alternatieve opvattingen ons veelbelovende hulpmiddelen verstrekken bij de studie naar onze 'menselijke wereld' en onze 'menselijke natuur', waarin taal een allesoverheersende rol speelt.

Abstract

This thesis 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 role of signs in our practices. The main purpose is to argue for the thesis that the latter, and not the former, provides us with promising tools to represent a representative fragment of the information carried by language.

The main criterion that I shall use to substantiate the thesis is the following: I stipulate that any model of language should preserve our descriptions of our uses of signs in general, and language in particular, in everyday life. With this criterion at hand I carry out the assessment of formal semantics on the basis of two arguments: 'the case of rules of language' and 'the case of incomplete understanding'. Such arguments show that the formal semanticist's model does not preserve our descriptions of language-use in everyday life.

To introduce my alternative, practice-based model I appeal to the following way of conceptualizing information: what does a 10 Euro bill stand for? 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. For instance, 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. In short, the role of signs in our everyday practices accounts for many of our concepts.

I believe that a semantic theory can profitably make use of the following elements: (a) a theory of practices, in particular, I will make use of Schatzki's theory of social practices; (b) an account of the role that words and expressions play in practices, which can be derived from the above-mentioned theory of practices; (c)

an account of how these roles underwrite the speaker's ability to comprehend and produce words; and (d) an account of literal meanings.

If my arguments are sound, they will show that an explanation of linguistic information requires taking the notion of a practice into account. To be sure, such picture requires a radically different account of language, linguistic competence, and linguistic communication, but I believe these alternative accounts provide us with promising tools to study our 'human world' and our 'human nature', in which language is paramount.

Titles in the ILLC Dissertation Series:

ILLC DS-2006-01: **Troy Lee**
Kolmogorov complexity and formula size lower bounds

ILLC DS-2006-02: **Nick Bezhanishvili**
Lattices of intermediate and cylindric modal logics

ILLC DS-2006-03: **Clemens Kupke**
Finitary coalgebraic logics

ILLC DS-2006-04: **Robert Špalek**
Quantum Algorithms, Lower Bounds, and Time-Space Tradeoffs

ILLC DS-2006-05: **Aline Honingh**
The Origin and Well-Formedness of Tonal Pitch Structures

ILLC DS-2006-06: **Merlijn Sevenster**
Branches of imperfect information: logic, games, and computation

ILLC DS-2006-07: **Marie Nilsenova**
Rises and Falls. Studies in the Semantics and Pragmatics of Intonation

ILLC DS-2006-08: **Darko Sarenac**
Products of Topological Modal Logics

ILLC DS-2007-01: **Rudi Cilibrasi**
Statistical Inference Through Data Compression

ILLC DS-2007-02: **Neta Spiro**
What contributes to the perception of musical phrases in western classical music?

ILLC DS-2007-03: **Darrin Hindsill**
It's a Process and an Event: Perspectives in Event Semantics

ILLC DS-2007-04: **Katrin Schulz**
Minimal Models in Semantics and Pragmatics: Free Choice, Exhaustivity, and Conditionals

ILLC DS-2007-05: **Yoav Seginer**
Learning Syntactic Structure

ILLC DS-2008-01: **Stephanie Wehner**
Cryptography in a Quantum World

ILLC DS-2008-02: **Fenrong Liu**
Changing for the Better: Preference Dynamics and Agent Diversity

ILLC DS-2008-03: **Olivier Roy**
Thinking before Acting: Intentions, Logic, Rational Choice

ILLC DS-2008-04: **Patrick Girard**
Modal Logic for Belief and Preference Change

ILLC DS-2008-05: **Erik Rietveld**
Unreflective Action: A Philosophical Contribution to Integrative Neuroscience

ILLC DS-2008-06: **Falk Unger**
Noise in Quantum and Classical Computation and Non-locality

ILLC DS-2008-07: **Steven de Rooij**
Minimum Description Length Model Selection: Problems and Extensions

ILLC DS-2008-08: **Fabrice Nauze**
Modality in Typological Perspective

ILLC DS-2008-09: **Floris Roelofsen**
Anaphora Resolved

ILLC DS-2008-10: **Marian Counihan**
Looking for logic in all the wrong places: an investigation of language, literacy and logic in reasoning

ILLC DS-2009-01: **Jakub Szymanik**
Quantifiers in TIME and SPACE. Computational Complexity of Generalized Quantifiers in Natural Language

ILLC DS-2009-02: **Hartmut Fitz**
Neural Syntax

ILLC DS-2009-03: **Brian Thomas Semmes**
A Game for the Borel Functions

ILLC DS-2009-04: **Sara L. Uckelman**
Modalities in Medieval Logic

ILLC DS-2009-05: **Andreas Witzel**
Knowledge and Games: Theory and Implementation

ILLC DS-2009-06: **Chantal Bax**
Subjectivity after Wittgenstein. Wittgenstein's embodied and embedded subject and the debate about the death of man.

ILLC DS-2009-07: **Kata Balogh**
Theme with Variations. A Context-based Analysis of Focus

ILLC DS-2009-08: **Tomohiro Hoshi**
Epistemic Dynamics and Protocol Information

ILLC DS-2009-09: **Olivia Ladinig**
Temporal expectations and their violations

ILLC DS-2009-10: **Tikitu de Jager**
"Now that you mention it, I wonder...": Awareness, Attention, Assumption

ILLC DS-2009-11: **Michael Franke**
Signal to Act: Game Theory in Pragmatics

ILLC DS-2009-12: **Joel Uckelman**
More Than the Sum of Its Parts: Compact Preference Representation Over Combinatorial Domains

ILLC DS-2009-13: **Stefan Bold**
Cardinals as Ultrapowers. A Canonical Measure Analysis under the Axiom of Determinacy.

ILLC DS-2010-01: **Reut Tsarfaty**
Relational-Realizational Parsing

ILLC DS-2010-02: **Jonathan Zvesper**
Playing with Information

ILLC DS-2010-03: **Cédric Dégremont**
The Temporal Mind. Observations on the logic of belief change in interactive systems

ILLC DS-2010-04: **Daisuke Ikegami**
Games in Set Theory and Logic

ILLC DS-2010-05: **Jarmo Kontinen**
Coherence and Complexity in Fragments of Dependence Logic

ILLC DS-2010-06: **Yanjing Wang**
Epistemic Modelling and Protocol Dynamics

ILLC DS-2010-07: **Marc Staudacher**
Use theories of meaning between conventions and social norms

ILLC DS-2010-08: **Amélie Gheerbrant**
Fixed-Point Logics on Trees

ILLC DS-2010-09: **Gaëlle Fontaine**
Modal Fixpoint Logic: Some Model Theoretic Questions

ILLC DS-2010-10: **Jacob Vosmaer**
Logic, Algebra and Topology. Investigations into canonical extensions, duality theory and point-free topology.

ILLC DS-2010-11: **Nina Gierasimczuk**
Knowing One's Limits. Logical Analysis of Inductive Inference

ILLC DS-2011-01: **Wouter M. Koolen**
Combining Strategies Efficiently: High-Quality Decisions from Conflicting Advice

ILLC DS-2011-02: **Fernando Raymundo Velazquez-Quesada**
Small steps in dynamics of information

ILLC DS-2011-03: **Marijn Koolen**
The Meaning of Structure: the Value of Link Evidence for Information Retrieval

ILLC DS-2011-04: **Junte Zhang**
System Evaluation of Archival Description and Access

ILLC DS-2011-05: **Lauri Keskinen**
Characterizing All Models in Infinite Cardinalities

ILLC DS-2011-06: **Rianne Kaptein**
Effective Focused Retrieval by Exploiting Query Context and Document Structure

ILLC DS-2011-07: **Jop Briët**
Grothendieck Inequalities, Nonlocal Games and Optimization

ILLC DS-2011-08: **Stefan Minica**
Dynamic Logic of Questions

ILLC DS-2011-09: **Raul Andres Leal**
Modalities Through the Looking Glass: A study on coalgebraic modal logic and their applications

ILLC DS-2011-10: **Lena Kurzen**
Complexity in Interaction

ILLC DS-2011-11: **Gideon Borensztajn**
The neural basis of structure in language

ILLC DS-2012-01: **Federico Sangati**
Decomposing and Regenerating Syntactic Trees

ILLC DS-2012-02: **Markos Mylonakis**
Learning the Latent Structure of Translation

ILLC DS-2012-03: **Edgar José Andrade Lotero**
Models of Language: Towards a practice-based account of information in natural language

ILLC DS-2012-04: **Yurii Khomskii**
Regularity Properties and Definability in the Real Number Continuum: idealized forcing, polarized partitions, Hausdorff gaps and mad families in the projective hierarchy.