

# Intuitions and competence in formal semantics

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## I Introduction

When formal semantics originated in the late sixties, early seventies of the previous century, it borrowed some important methodological assumptions from the generative tradition in linguistics concerning intuitions, competence, linguistic facts and their connections. These assumptions helped shape a certain methodological practice in which intuitions play a key role.

Today one witnesses a substantial theoretical and conceptual diversity, in linguistics in general, and increasingly also in semantics. Formal semantics established itself as a distinct discipline in the seventies and continued to thrive in the decades that followed. It is still very much a flourishing field, but not longer the dominant paradigm, being in the company of corpus-based investigations, including typological and historical databases, work that extensively uses computational modelling, and so on. With this diversity in theories and approaches comes one in methodologies. And in the light of that it seems apt to reflect on the origins of the methodology of formal semantics to see how it compares.

While methodological diversity certainly can be regarded as a good thing, it seems much more difficult to say the same of the lack of consensus one may notice on what the proper conceptualisation of the core phenomena of semantics is to be. It is one thing to study the same phenomenon with a variety of methods, it is quite something to note that there is no agreement on the basic properties of the phenomenon as such. Natural language meaning nowadays is conceptualised in strikingly different ways, not just in semantics itself, but also in neighbouring disciplines, such as philosophy.<sup>1</sup> This variety not only leads to substantial incomparability of results, it is also unsatisfactory from a conceptual point of view. It is one thing for semanticists to disagree about the

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1. One need only think of the current debate between semantic minimalists and (radical) contextualists to be reminded of what fundamental different conceptions of the notion of natural language meaning can be, and are being, defended.

right way to go about their business, it is quite another if they don't see eye to eye about what that business is supposed to be.

These are quite substantial and complicated issues that need a sustained and multi-varied investigation to sort out. The present paper focusses on just one small detail: the original motivation of the 'methodology of intuitions' that has shaped formal semantics. We will do so by drawing mainly on what is stated about this issue in textbooks, encyclopaedic overviews, and lecture notes. The reason for that is the following. What we are interested in is an aspect of the framework of formal semantics, i.e., the set of assumptions and principles from within which formal semanticists work. If one looks at that work, i.e., the actual research, one will find the framework as such hardly ever discussed. This to be expected as the framework is used there, rather than investigated. It is in introductions to the discipline, such as textbooks, that the framework is discussed explicitly: after all, that is what is at stake when one introduces students to a discipline: teach them the framework.

Ideally, of course, such an investigation should be comprehensive and systematic. It should make sure that the material used is really representative and, in particular, it should try to match the more systematic observations concerning this type of material with information about other factors that are relevant for the shaping and development of a disciplines, such as institutional developments, sociological trends, and the like.<sup>2</sup> That is beyond the scope of a paper, and beyond the expertise of its author anyway. Nevertheless, it is hoped that the paper contributes in some small way to a better understanding of what semantics is, where it came from and what it might become.

## 2 Two approaches to formal semantics

Initially, formal semantics was rather heterogeneous. There was diversity with regard to the formal tools that were deemed suitable for application in natural language semantics. For example, there was a debate about the use of intensional logical systems. For some, such as Montague, the intensional nature of natural language constructions was obvious and he did not hesitate to use the appropriate logical tools. A similar, pragmatic stance was advocated by Lewis. Mainly for philosophical reasons, others, such as Davidson, would stick with the use of an extensional logic. This controversy was settled with the de facto dominance of the Montagovian paradigm, and among Montagovians there was considerable consensus concerning the descriptive toolkit that was to be employed (intensional type-theory or some close variant of that).<sup>3</sup>

Also, and more important for the topic of this paper, there was heterogeneity with respect to the kind of enterprise that formal semantics was, or was to be. One approach viewed semantics as basically a conceptual enterprise, whereas the other approach conceived of it as an empirical discipline.

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2. We do trust that the sources used in what follows will be recognised by practitioners in the field as among the well-respected in the field.

3. Davidsonian extensionalism did continue to have supporters (cf., e.g., Larson & Segal (1995)), but more with philosophers than with linguists.

The conceptual approach was endorsed by Davidson and Montague, among others. Montague regarded formal semantics primarily from a philosophical-technical perspective: his goal was to come up with a formal and explicit procedure to link natural language expressions with suitable logical representations, and in that sense his approach was mathematical-conceptual, rather than empirical.<sup>4</sup> Likewise, Davidson, who, as was just mentioned, technically pioneered a different approach than Montague, broadly agreed with the latter in his outlook: for Davidson semantics was a conceptual reconstruction of what makes semantic competence possible in the first place, not an empirical investigation thereof. That is not to say that such a conceptual approach is not constrained by empirical considerations, of course. Any analysis in this approach needs to be consistent with the actual manifestations of what tries to capture. The point is, rather, such constraints are global since such analyses do not make any empirical claims regarding the actual process underlying language acquisition and language use, both in production and in interpretation.

Quite early in the development of formal semantics researchers with a background in linguistics, notably Partee, Bach, Bartsch and others, started to work with philosophers and logicians, but pursuing a different, empirical approach. On their view a semantic theory is an integral part of a comprehensive linguistic theory. Its aim is to come up with descriptively adequate, explanatory accounts of natural language meaning as an empirical phenomenon. For some, the then-current transformational-generative framework as proposed by Chomsky served as a natural reference point, others explored different approaches, such as the framework of categorial syntax or that of generative semantics. But for all the empirical import of formal semantics was key.

The difference between the conceptual and the empirical approaches involve two different views on what formal semantics is after and, consequently, on the role that interpreted formal languages play in the enterprise. On the conceptual approach the goal is to come up with a strictly formal, unified account of meaning, which in principle is adequate for both formal and natural languages.<sup>5</sup> Because of the assumed uniformity of the basic principles underlying both kinds of languages, interpreted formal languages can be used as explanatory models of certain features of natural languages. On the empirical approach the goal of formal semantics is the formulation of an empirically adequate theory that characterises the semantic competence of speakers of a natural language. Again, interpreted formal languages can serve as a model, but the empirical constraints are stronger, and pertain also to the underlying mechanisms which govern actual processes of acquisition, production and interpretation. In view of this, the empirical approach can be regarded in a certain sense as a further specification of the conceptual one: it shares for example the view on how interpreted formal languages function in a semantic theory, but differs on the import of empirical facts and observations.

It is worth pointing out that both approaches are committed so a form of universalism with respect to the goal they formulate for formal semantics, but for slightly

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4. Cf., Thomason (1974) for more detail on Montague's systematic position. Cf., also Barbara Partee's contribution to this volume.

5. A particularly clear expression of this view can be found in the opening sentences of Montague's 'Universal Grammar' (Montague, 1970).

different reasons. The conceptual approach aims for what makes competence as such possible, and thus is indifferent with respect to differences between particular natural languages. On the empirical approach one would expect more sensitivity to such differences, and as a matter of fact formal semanticists have taken an increased interest in typological variation during the last decade or so. Yet the goal as it was initially conceived, viz., to characterise semantic competence as part of a more general psychological theory of human cognition (including possibly its biological substrate), tends towards a greater emphasis on what is common within the observed variety that natural languages display.

In the end, the empirical view on what formal semantics is about, what its goal is and how it should try to achieve that, prevailed. Having started out a remarkable interdisciplinary enterprise, formal semantics quite rapidly turned into a branch of linguistic theory, sharing explicitly or implicitly the same overall concerns as those working in, for example, syntax.

### 3 The standard view: core principles

Having emerged in the late sixties, early seventies the empirical approach to formal semantics owes more than just a general outlook on linguistic theory to the generative tradition that was dominant at the time. More specifically, in the way in which intuitions are viewed, and, especially, in the way in which they are used, formal semantics adhered to what, at the time at least, was a more or less standard way of viewing them. This standard view can be summarily characterised by the following three general principles.<sup>6</sup>

The first principle states that intuitions are to be regarded as the primary data channel that linguistics works with. It is intuitions that are the primary data on which to build a linguistic theory, and, and this will turn out to play an important role in what follows, it is also intuitions that such a theory aims to account for. This first principle thus concerns the *function* that intuitions have.

The second principle is about their *content*, viz., about what they are intuitions of. It holds that the content of the intuitions that are relevant for linguistic theory are linguistic facts. In general terms, intuitions are about properties of, and relations between, expressions that are systematic and objective, and that are accessible by means of intuitions.<sup>7</sup>

The third principle, finally, concerns the *origins* of intuitions, and thereby, as we shall see later on, provides a further restriction on whose intuitions count. It links intuitions to linguistic competence and states that competence as the implicit knowledge of language that users have is the source of their intuitions. Knowledge of language,

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6. In calling what follows ‘the standard view’ we gloss over various subtle differences that as far as the purpose of the present paper is concerned are not really relevant. We trust that formal semanticists working in the empirical approach will recognise these principles as indeed operative in their everyday practice.

7. Of course, one may take intuitions as such to be merely indicative of other facts, such as pertain to underlying cognitive or neural processes. But for the working semanticist those underlying facts are not what he deals with in terms of intuitions.

i.e., linguistic competence, is manifested in spontaneous and elicited intuitions on the linguistic properties of expressions of the language.

Together these principles have both a theoretical and a practical import. On the theoretical side they help constitute the format of a linguistic theory, both in terms of its subject matter and its goals. They define what a linguistic theory is about, and thus set the systematic goal of the descriptions and explanations that such a theory is to provide. As we shall see, the link between intuitions and competence is particularly important here.

On the practical side, these principles suggest a particular methodology, i.e., a set of procedures to collect, describe and explain data, and to test tentative descriptions and explanations. If intuitions are the primary data channel, this has consequences for how a linguist can be expected to go about gathering data and testing his initial descriptions and explanations. And in its turn that has further consequences for the manner in which linguistics can function as an applied science.

The three principles mentioned above provide quite general features of intuitions, — their function, contents, and origins—, that are characteristic of the generative tradition. That they are operative and endorsed in formal semantics as well is shown by the following examples.<sup>8</sup>

Consider the following passage from Dowty, Wall and Peters' 1981 influential *Introduction to Montague semantics*:

In constructing the semantic component of a grammar, we are attempting to account [...] for [speakers'] judgements of synonymy, entailment, contradiction, and so on. (Dowty et al., 1981)

This unequivocally identifies what a semantic theory, as a component of an overall grammar, is concerned with: it attempts to give a systematic account of the semantic intuitions of speakers of a language. It also makes clear what semantic intuitions are about, viz., facts concerning semantic properties of and relations between natural language expressions. Both the principle that intuitions function as the primary data channel as well the principle that the content of intuitions are semantic facts are thus clearly endorsed here.

Quite similar statements can be found in one of the best known introductions to formal semantics, written almost two decades later. In *Meaning and Grammar*, which originally was published in 1998, Chierchia and McConnell-Ginet write:

In a real sense, such intuitive judgments [concerning implication relations and other semantic properties parasitic on implications relations, MS] constitute the core of the empirical data against which semantic theories must be judged. (Chierchia & McConnell-Ginet, 2000)

This echoes the description of what semantics is about we just encountered. It also makes explicit that intuitions fulfil a normative role: they are what determines whether a description or explanation that is offered by the formal semanticist is correct or not. We will come back to this point later.

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8. What follows are just a few illustrative examples, and many textbooks and overviews contain similar passages.

Finally, with regard to the origins of intuitions, viz., their being rooted in linguistic competence and knowledge of language, this principle we find explicitly endorsed as well, as the following passage, taken from De Swart's 1998 *Introduction to Natural Language Semantics* illustrates:

In linguistics, the term grammar is often used to describe what internal knowledge fluent speakers possess of their language – their linguistic competence. Whatever fluent speakers know of their language is a proper part of the description of that language, and belongs to the object of study of linguistic theory (de Swart, 1998)

This ties competence to knowledge of language in quite general terms, but as the context makes clear, De Swart intends the equation to apply specifically to semantics as well.

There are a lot more passages from textbooks, overviews and introductions that could serve to show that the core principles regarding intuitions that we have outlined above are accepted more or less without further qualification. Certainly for the empirical approach to formal semantics it holds that these principles belong to the very framework of the discipline. As such, they are hardly ever mentioned, let alone discussed, in work that reports on the results of research carried out within that framework. It is mainly<sup>9</sup> in texts that are meant to introduce students to the framework that we can find explicit mention of them.<sup>10</sup>

#### 4 Intuitions, facts, competence, and their connections

The various statements of the standard view in formal semantics draw on three central concepts: intuitions, semantic facts, and competence. In order to get a better grasp on

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9. Though not exclusively. Notable exceptions are, e.g., Cresswell (1978), Lewis (1975), and in particular a number of papers by Barbara Partee, e.g., Partee (1979, 1980, 1988), in which she addresses concerns closely related to the ones discussed here. A comprehensive treatment of the role of intuitions should cover these contributions to the discussion as well, of course. However, the scope of the present paper does not allow that. Moreover, as was pointed out earlier, our main concern in this paper is with the *canonical* texts, i.e., the texts in which the underlying principles of the framework are handed on to students and aspiring scholars. The fact that some of the discussion at the theoretical level does not appear to have had much influence on those canonical texts is a fact that as such is significant.

10. And that even does not hold in general: in one of the best known and most widely used introduction to formal semantics, viz., Heim and Kratzer's *Semantics in Generative Grammar* (Heim & Kratzer, 1998), intuitions, competence and knowledge of language are not discussed, or even referred to explicitly at all. Apparently, the framework within which Heim and Kratzer locate a formal semantic theory, viz., that of generative grammar, is supposed to be so well-known and uncontroversial at these points that these are not considered worth mentioning.

Heim and Kratzer's book also provides an illustration of what was noted in footnote 9, viz., the lack of influence of foundational discussion in canonical texts. As Barbara Partee (p.c.) brought to my attention, Heim & Kratzer state outright that their concern is with 'empirical linguistic questions' and not with foundational issues. Referring to the thorny area of propositional attitudes, where arguably foundational and empirical questions can not really be separated, and where, as Heim and Kratzer acknowledge 'there is no agreement on the issue yet', they simply continue that 'the good news is, however, that uncertainty [...] does not seem to have a lot of repercussions on the way linguists do semantics every day.' (Heim & Kratzer, 1998, p. 311).

their connections, let's look at each a bit more closely.

As we have seen, the intuitions that are considered central to semantic theory are those of a native speaker of the language that is being described. There is an implicit reference here to an evaluative distinction between native and non-native speakers: it is the intuitions of the former that count and that will always outrank those of the latter. Concomitant to this is an odd, quasi-naturalistic conception of what a language is: it is what we acquire as our mother tongue and that henceforth remains in place as a stable and virtually unchanging entity.<sup>11</sup> What we learn to master as non-native speakers as a second or third language is in fact not the same thing as what the native speakers have acquired: when it comes to a proper description of the natural language in question, the intuitions of non-native speakers do not count, not because they don't have them, but because they refer to the 'wrong' object.<sup>12</sup>

Semantic facts are commonly characterised in terms of an entailment relation, and other concepts, such as analyticity, synonymy, ambiguity, etcetera, are taken to be definable in terms of that. Entailment is defined in terms of truth conditions, and sometimes it is the latter that are considered the primary semantic facts. Here formal semantics shows its logical roots, as these are concepts that are central in traditional philosophical and mathematical logic. What is relevant to note is that often it is assumed that once a truth definition for a formal language has been stated, entailment simply follows from that. That given a truth definition there usually are different options for a proper definition of a notion of entailment (and that of validity), is not something that seems to play a very important role. Probably the implicit assumption is that for a natural language there simply exists only one proper definition, which again seems to indicate that there is a naturalistic bias here. More in general, we may observe that semantic facts are not considered to be theory-related. They are not facts that can be stated only with reference to a particular semantic theory, concretely, with reference to a particular formal language with a completely specified semantics, and specific definitions of validity and entailment. Semantic facts are assumed to be natural facts, i.e., entities that exist 'out there'.

Finally, competence. That can be found referred to a number of ways. One way is in connection with intuitions, specifically in a characterisation of whose intuitions actually count as bona fide data. As we saw above, that is the native speaker, and he is often also introduced as a 'competent' speaker. Another context in which competence can be found mentioned is in characterisations of the object of investigation of formal semantics. What semanticists are often said to be concerned with is with the adequate description and proper explanation of semantic competence, the implicit knowledge of the semantics facts of a language that a native speaker has acquired.

These characterisations of competence illustrate that the notions of intuition, competence, and semantic facts are taken to be related in various ways. Competence

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11. 'Quasi-naturalistic' since although language is assumed to be a natural phenomenon, it is a highly idealised one, and as such bears no immediate relation with what we can observe of language. Cf., Stokhof & van Lambalgen (2011a,b) for more discussion.

12. This does not mean that facts about first and second language acquisition can not be deemed relevant, but they are so in a different way than the intuitions of competent native speakers.

and intuitions are connected as follows: A speaker is considered competent if and only if he has (all and only) correct intuitions. This turns intuitions into a manifestation of competence: it is by the intuitive judgements that a speaker makes that we judge his competence.<sup>13</sup> In one direction the connection appears intuitively plausible: if a speaker makes an incorrect judgement, then this can be taken to signal a lack of competence. In the other direction, however, the demand may appear less convincing: if a speaker fails to have a particular intuition, should this also be considered a lack of competence? If we take it as such, this means that we view the knowledge of language that constitutes competence as total knowledge of all its relevant properties. This introduces another connection, viz., that between intuitions and semantic facts. What intuitions are about are semantic facts concerning the language in question. And given the connection between intuitions and competence just noted, this makes intuitions expressions of our semantic competence, i.e., of our knowledge of semantic facts.

## 5 Intuitions, facts, competence, and behaviour?

The odd man out in this picture is of course behaviour: actual language use of the relevant kind, i.e. patterns of use that can be described in terms of semantic properties and relations. Why?

The key to the answer lies in the notion of competence and its relation to performance, i.e., the actual, observable linguistic behaviour of the speakers of a language. The competence – performance distinction is a characteristic feature of the generative tradition, and one that formal semantics appears to have taken over from that tradition. In effect, it is this distinction as such that makes any reference to actual linguistic behaviour superfluous from the point of view of linguistic theory. Or so it seems. Cf., the following characterisation of the competence – performance distinction, from Chomsky's 1965 classic *Aspects of the Theory of Syntax*:

Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest and errors (random or characteristic) in applying his knowledge of the language in actual performance (Chomsky, 1965)

This construction of competence as the key concepts that linguistic theory is concerned with has been extremely influential, which does not mean, of course, that it hasn't also been criticised.<sup>14</sup> What is at stake here is that the competence – performance distinction makes the inclusion of actual linguistic behaviour as a source of data for formal semantics superfluous.

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13. Without such a connection the very notion of competence as distinct from performance would lack any connection with what speakers do, on the basis of which we can ascribe them competence (or judge them to speak the same language, and so on).

14. In fact, one way of understanding the debate between generative linguistics and its rival frameworks, such as those of functional grammar and cognitive linguistics, is in terms of their respective take on the viability of the notion of competence as Chomsky has proposed it.

The reasoning behind that seems to be something like the following. The very distinction between competence and performance implies that there is a principled unbalance between actual, observable behaviour and ‘ideal behaviour, i.e., behaviour that accords with competence. Actual behaviour will be subject to the various conditions and constraints that the notion of competence is said to abstract away from.<sup>15</sup> Such behaviour is determined by a wide variety of factors, and as such it will not give rise to a proper characterisation of competence. However, formulating the relevant semantic facts in terms of behaviour that is in accordance with competence would be superfluous: a description in terms of semantic facts and a description in terms of behaviour that is necessarily in accordance with competence which embodies perfect and total knowledge of the facts would be isomorphic. Actual behaviour can not be a starting point and competence-conforming behaviour is superfluous, thus behaviour becomes a superfluous notion for semantic theory.

This points towards the priority that competence enjoys. If one wants to maintain a distinction between competence and performance, then competence has priority by definition. If, however, one decides not to make the distinction and focusses on actual behaviour, it is not just competence that goes by the board, but a number of other idealisations as well: without competence the notions of language and meaning that native speakers are assumed to have perfect knowledge of, stop making sense as well.

And for similar reasons the central role of intuitions as the primary data channel will be eroded as well. Intuitions that reflect competence, i.e., perfect knowledge of language, are a quite different kind of entity than the ‘intuitions’, if such we want to call them, that we might have about actual behaviour. The latter are more a kind of hunches that we may have about what actual behaviour a speaker might display, and as such always stand in need of corroboration by subsequent observation. For the competence related intuitions no such requirement exists. In that sense, the generativist concept of competence is an intrinsic component of the standard methodology of intuitions.

## 6 Intuitions, facts, and competence: a conundrum

These observations concerning the contents of the concepts of intuitions, facts, and competence, and the various connections that are constructed between them, give rise to a number of questions. For the concerns of the present paper the most central of those is the following: Are the connections between intuitions, facts, and competence factual connections, i.e., connections that hold contingently, or are they conceptual, i.e., do they hold necessarily?

A number of more concrete and specific questions are implied by this central question. For example: Can a competent speaker have the wrong intuitions? If so, can

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15. Cf., the already mentioned Stokhof & van Lambalgen (2011a) for arguments that actually this is not an abstraction in the ordinary sense, i.e., a construction in which a quantitative parameter of a phenomenon is fixed to some convenient value for the time being, but rather a type of construction (in the paper called an ‘idealisation’) that is qualitative in nature, and that changes the phenomenon under discussion in a much more profound sense. This has important consequences for the status of linguistic theory as a scientific discipline.

such a speaker come to realise all by himself that his intuition is wrong? And how exactly could he perform such a feat? In its turn this question implies another one: What would a wrong intuition (of a competent speaker that is) be? An intuition about something that is not actually the case? An intuition that conflicts with other intuitions? In the latter case: can the intuitions between native speakers conflict with each other? Can there be facts about which some/most/all competent speakers fail to have intuitions? I.e., can there be semantic facts that we do not know about? If so, can they be discovered? Or can there be facts that could go unnoticed forever?<sup>16</sup>

These are all interesting questions, that deserve a careful investigation as such. However, for our purpose the crucial question is the first one: Are the connections between intuitions, competence and facts conceptual or factual? Both options can be defended, but both give rise to further issues.

It will be clear from the foregoing discussion that the standard view on intuitions strongly tends towards the first option, viz., that the connections are conceptual in nature, and hence hold necessarily. This will be clear from the way in which the various connections are introduced: they come as elements of explications or definitions of one or more of the concepts in question. For example, if competence is explicated as implicit knowledge of language, then we are not given an observation of some empirical connection holding between two independently given entities. Rather the stated connection is part of an explanation what competence is supposed to be. The same point can be made if we look at the way in which the various connections are justified: again, this is with conceptual arguments, rather than by an appeal to empirical observations.

There is one, major problem with such a view on the connections between these central concepts. If the connections are conceptual, then they can not be affected by empirical observations. That may not appear to be a major drawback at first sight, for after all, that is precisely what the conceptual view is supposed to guarantee. However, if an intuition about some semantic fact can not be falsified by another intuition (about the same or some other fact), then it also makes no sense to maintain that intuitions can be verified with an appeal to facts. So the problem really is that intuitions lose any connection with empirical reality, which means that it is unclear how a semantic theory that uses intuitions as its primary data channel can be regarded as an empirical enterprise.

But what about the other option, viz., that the connections in question are factual? That raises another kind of problem, one that can be illustrated by the connections between intuition and competence. If these connections are factual, then we need minimally two things. First of, we require an indication of how they are different, or could be different, respectively. For if intuitions and competence are only contingently related, then the connections that actually exist between them, might also fail to obtain, and we should be able to indicate under which circumstances that might be the case, without changing the concepts of intuitions and competence in any essential way. However,

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16. Recall that semantic facts are assumed to be strictly theory-independent: it does not depend on the actual theory one endorses what the facts of semantics are, in the strong sense that those facts should be identifiable independently of a specific theoretical vocabulary. So some logical facts that we discover within a specific theoretical framework that actually depend on the conceptual structure of that framework does not count. (Generalised quantifier theory provides some nice examples of such facts.)

such an indication is not provided. Secondly, we would need an entirely different type of argumentation for making intuitions the preferred data channel, and for regarding competence as the object of investigation of semantic theory.

So it seems we are faced with the following conundrum. If the connections between intuitions, competence and semantic facts are conceptual, it becomes unclear what kind of empirically motivated descriptive or explanatory work can be based on them. And if the connections are factual, we need a much better justification for the role they are assigned in setting up a semantic theory

## 7 Intuitions and theory: another conundrum

At this point one might think that the problem disappears once we look at intuitions, competence and facts not as independently given concepts, but rather as entities that exist only within the confines of a semantic theory.

Let's focus on intuitions and look at how intuitions and semantic theory are supposed to fit together. This time we take our cue again from a textbook, Chierchia & McConnell-Ginet's *Meaning and Grammar*. According to them, the first step in the process that embed intuitions in semantic theory is to abstract from the variation in actual language use and from the differences between the intuitions of actual language users:

As in the case of any linguistic phenomenon, there may be areas of real diversity within the community of language users, dialectal and even ideolectal differences. This complication must not, however, obscure the important fact that judgments about semantic phenomena are interconnected, and thus that there is relevant evidence to be offered in support of such judgments. (Chierchia & McConnell-Ginet, 2000)

Acknowledging the fact that intuitions between (groups of) speakers may differ, Chierchia & McConnell-Ginet do maintain that there is a common core of intuitive judgments that all speakers share, and that it is this common core that constitutes the proper object of investigation that a semantic theory is concerned with.<sup>17</sup>

The second step is to find the relevant systematic patterns in the thus homogenised set of data:

In learning to do semantics *as a linguist* one must learn to develop systematic arguments and explore semantic intuitions systematically. [Ibid., emphasis added]

This construes a subtle but crucial distinction between the intuitions of ordinary speakers and those of the trained semanticist. Apparently the intended outcome of one's training should be an ability to discern systematic patterns in intuitions and to appeal to those in developing and justifying one's semantic descriptions. But the difference is not merely a matter of sensitivity to systematic patterns, it also involves qualitative differences:

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17. Note that the status of the diverging intuitions is left unaccounted for. We will come back to this point in the last section.

And one must learn to discriminate between the strict notion of the entailment relation and looser variations of implication [ibid.]

So the difference between the intuitions of lay speakers and those of trained semanticists is really that unlike the former, the latter are re-conceptualised in intra-theoretical terms. The intuitions of the semanticists are explicitly about semantic facts stated in a theory-laden vocabulary, and as such are qualitatively different from those of the lay speaker.<sup>18</sup> And with that difference also comes difference in force: in case of a conflict it is the intuitions of the semanticists that hold sway. But in effect what we are doing here is really changing the subject: what we were supposed to be dealing with were intuitions of native speakers, not those of native speakers with an MA in theoretical linguistics.<sup>19</sup>

The incorporation of intuitions in a theoretical framework also leads to the following problem. If intuitions are theory-dependent, and intuitions and competence are intrinsically related, then competence would appear to be theory-dependent as well. But if what a semantic theory is supposed to describe and explain is semantic competence, this seems circular: another conundrum. Enter Janus . . .

## 8 The Janus face of intuitions

The crux of the matter seems to be that on the standard view intuitions are expected to play two distinct roles at the same time. First of all, intuitions are what a semantic theory is about. There being no difference between semantic facts and the intuitions of native speakers about them, intuitions is what a theory is meant to systematise, describe and explain. This can be called the ‘intuitions-as-objects’ role. Secondly, intuitions also serve as the primary access to what the theory is about. Intuitions are the primary data channel: it is intuitions of native speakers that are considered as direct manifestations of competence and as direct access to semantic facts. This can be called the ‘intuitions-as-data’ role.

A simple substitution will reveal the inherent self-reflexivity that results from having intuitions play these two roles simultaneously. Note also that, due to the conceptual view on the connections between intuitions, competence and semantic facts that we

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18. To see the importance of this observation, it helps to keep in mind that entailment itself is a theoretical notion.

19. That semanticists, being both native speakers and scholars, have a different view on the status of their intuitions is another matter, the point is that the content of the intuitions of both the lay native speaker and the expert can not be really different, provided, that is, that intuitions are what a semantic theory is about. Which becomes dubious in the light of such observations as mentioned above. Further reasons to doubt that intuitions are really independent of cognitive tasks comes from experiments that show a remarkable shift in neural activity if native speakers are asked to reflect on their intuitions. Cf., Baggio et al. (2008) for a case study involving the progressive paradox.

It should be stressed that the point here is not that scholars/scientists should not use their intuitions about what is relevant and what is not: there is always construction, and this happens in every discipline, and intuitions (in the sense of ‘gut feelings’, ‘hunches’, etc) are an integral part of that. The point is rather that in the case of semantics (or linguistics in general) such ‘meta-intuitions’ are not intuitions about meaning (or some other linguistic phenomenon) as such. Rather, these meta-intuitions sculpt the space of possible theories (and indeed, they do so also by sculpting the phenomenon to be explained), but they themselves are not part of the phenomenon.

saw the standard view endorses, no rephrasing in terms other than intuitions will be of help. At best it will increase the number of substitutions, but it will not take away the inherent self-reflexivity.

What this shows is that the standard view effectively requires of semantic theory that it perform a kind of ‘Von Münchhausen trick’: semantic theory is supposed to pull itself by its own hair from the morass. Such a phase may be needed to bootstrap a theory, i.e., to constitute a particular field of inquiry and the concomitant means of investigation. But it can not be a stable configuration. It is one thing for a theory to start in a state in which data and objects are not clearly separated. But at some point the self-reference has to be replaced by a characterisation of both in terms of independently accessible properties. After all, Von Münchhausen may have pulled himself from the morass, but he wasn’t able to keep himself suspended above the surface indefinitely.

A brief comparison with empirical theories in the sciences might help to pinpoint the problem more precisely.<sup>20</sup> One way of looking at a scientific theory is as a systematic representation of all that we know (or, at least, think we know) about some empirical phenomenon. And what we know concerns laws governing the events, states, objects and their properties and relations that together constitute the phenomenon in question. What is relevant at this point to note is that the laws that are the body of the theory need not be assumed to be facts in the world as such, or minimally, that they need not be assumed to be facts of the same order as the events that they govern. We can be realists as far as laws are concerned, but their ontological status will be different from that of the events that they apply to.<sup>21</sup>

The case of intuitions in linguistics, however, is fundamentally different. As we saw clearly expressed earlier on, a semantic theory is taken to state in a systematic what the intuitions of native speakers of the language are. But what the theory is about are these very same intuitions. Never mind that these intuitions are based on competence, and concern semantic facts: given the conceptual nature of the connections, there really can not be an ontologically significant difference, like there is in the case of empirical theories in the sciences. That seems to be the real problem with the standard view: it conflates the ontological status of data and object. And that is why we don’t seem to be getting anywhere.

## 9 Enter the joker and the thief

So is there a way out of here? It seems there is, provided we are prepared to let go of one of the defining characteristics of the generative tradition in linguistics, viz., its claim that linguistics is part of cognitive psychology (and, ultimately, of human biology). The issue that is at stake is what kind of psychologism we are prepared to subscribe to. This is a complicated question, but for present purposes it will do to distinguish between

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20. This draws on an argument developed in Stokhof (2007).

21. That realism with regard to scientific theories and natural laws is a highly debated issue, is really not relevant for the point that is being made here, which concerns how we look at scientific theories. All that is needed here is that we acknowledge that we need to discriminate between the ontological status of laws and that of facts.

the following two ways to conceptualise the psychological dimension of linguistic competence, and more importantly, between two ways of constructing linguistic theory in relation to it.

The first we may call ‘weak psychologism’, and it holds that linguistic competence is at least partly a cognitive faculty, and as such is rooted also in human psychology and human biology. This would seem hardly a controversial claim. Of course, one may construe it more loosely and more strictly, leaving more or less room for other determining factors, such as the social and physical environment, embodiedness, and so on. But that there is at least a cognitive dimension to linguistic competence will really not be disputed.

Contrast this position with ‘strong psychologism’, which claims that linguistic competence is solely a matter of structural features of human cognition, and that, hence, it is the goal of linguistic theory to provide a descriptively adequate and explanatorily satisfactory theory of linguistic competence. This is really the hallmark of the Chomskyan generativist tradition, and it is only this strong form of psychologism that supports the claim that linguistics really is nothing but a branch of cognitive science.

What is relevant to note in connection with our present conundrum with regard to intuitions, is that weak and strong psychologism have different consequences for linguistic methodology. More specifically, weak psychologism as such does not prescribe one particular way of doing linguistics. Its acknowledgement that linguistic competence is part of human cognitive psychology, i.e., that it also has a cognitive dimension, does not come with a commitment to a particular methodology, at least not to just one methodology for all of linguistics. Certain aspects of linguistic competence can be studied using the methodologies of cognitive science. But weak psychologism does not rule out that various other aspects of natural language can, and should be, studied in ways that do not refer in any essential way to the cognitive dimension of competence. It does not even imply that there needs to be one unified methodology for every distinct part of linguistic theory.

For strong psychologism this is different. By making a theory of competence the goal of linguistics it commits itself to a particular, unified methodology, in which intuitions play the central role. In combination with the standard view, according to which the connections between intuitions, competence and semantic facts are conceptual rather than contingent, strong psychologism necessitates a methodology in which intuitions have to play the two roles we identified earlier on. It is intuitions that are both object of the theory and the primary data channel for the theory. All other methods of gathering data are subservient to normative judgements based on intuitions.

No doubt, such a unified methodology is attractive because of its simplicity and elegance. It allows the formal semanticist to go about doing semantics with minimal effort when it comes to the gathering and validating of data, and thus to concentrate on the theoretical and formal parts of the task. However, as we argued above, it also leads to a conundrum. And giving up on strong psychologism seems to be the only way out.

## 10 Odds and ends

There are, of course, a lot of remaining questions. Perhaps one of the more pressing ones is this: Couldn't we abandon the empirical approach and resort to the conceptual view, so as to maintain the conceptual view on the connections between intuitions, competence and facts, yet not be caught in the conundrum we identified earlier? For two reasons that does not seem to be a direction formal semanticists would want to explore. First of all, by doing so we give up on the idea that formal semantics is an empirical discipline, i.e., an undertaking that deals with an empirical phenomenon and that tries to come up with descriptions and theories that have empirical content and that can be justified (or falsified, as the case may be) with reference to empirical facts. That seems not an acceptable move to make. But secondly, even if we were to go that route, our troubles wouldn't be over. For conceptual analysis, too, relies on intuitions, and as such it has come under attack, by similar arguments as presented here against the empirical approach.<sup>22</sup> It is only by making conceptual analysis susceptible to empirical findings that we can avoid ending up in a similar conundrum. But these should then be independently motivated, thus reintroducing the empirical approach into the picture.

So, for better or worse, we seem to be committed to an empirical point of view, and that means that we can avoid the problems with the standard view only by giving up on strong psychologism, developing independently motivated characterisations of the core concepts, and building an empirical methodology on top of that. What is right about the standard view is that there is an intuitive connection between our competence as language users, our intuitions about semantic properties of expressions, and the actual meanings these expressions have. But in order for these to be accounted for they should be properly objectified, i.e., studied by means of methods that do not implicitly or explicitly call on them to provide data or evaluate descriptions and analyses.

But then one might ask how relevant these considerations still are: haven't we moved on, employing different methodologies, such as corpora-based methods and experimental studies, also in formal semantics? There are three reasons why we feel it is still important to analyse these matters.

First of all, although there is an increasing number of formal semanticists who base their analyses also on data extracted from corpora, or produced by experimental studies, and by historical and typological comparisons, there is still a sizeable body of work done along the lines of the standard view. And in as much as parts of formal semantics have 'moved on', this analysis might help to realise why that move had a certain conceptual necessity. For a move from intuitions to, for example, experimental data is not a matter of availing oneself of more data but of different data.

Secondly, if we are seriously considering moving away from dependence on intuitions and replacing them with data about actual linguistic behaviour, we need to realise that the kind of behavioural data that we need in semantics, i.e., data that exemplify inferences, judgements of ambiguity, and so on, is very hard to get from the standard text and speech corpora. These data are not simply extractable from such corpora by themselves, since their proper identification needs additional contextual information,

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22. Cf., e.g., Weinberg et al. (2010) for references and an overview of the current state of this debate.

often of a non-linguistic kind. Experimental paradigms and other methods of gathering systematic behavioural data are called for here.

Finally, it should be pointed out that abandoning an intuition-based methodology and shifting toward the use of data consisting of actual language use, is more than just replacing one tool by another. In effect, such a move is not just methodological, it affects the very core of what a semantic theory is, as it calls for a re-definition of its central concepts. A simple example will illustrate what is at stake. If we find, say, that 80% of the speakers of Dutch consider a particular string semantically significant and 20% do not, then we can not, in the end, simply cope with that in terms of ideolectal variation. The very notion of semantic significance and its role as a defining characteristic of natural language meaning needs to be re-considered. Similarly for differences in judgments regarding entailment, analyticity, synonymy, and other core phenomena. Stable and significant differences in judgements or behavioural responses (experimentally solicited or recovered from corpus data) need to be taken into account. And they need to be taken into account in such a way that the very existence of such differences no longer counts an anomaly in the face of a uniform conception. So a move towards more data-oriented, corpus-based approaches is more than just a shift in our conception of what the data are, it comes with a need for major re-conceptualisation of the enterprise of formal semantics as such.

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