Linguistic Intuition: An Exercise of Linguistic Competence[1]

Abstract. A number of philosophers and linguists have raised worries about the heavy reliance of linguistic theorizing on intuition data. A particularly troubling skeptical worry is that such data may not be of the right sort to serve as reliable evidence for a theory of linguistic competence, the presumed subject matter of linguistic theorizing.   I offer an empirically-supported account of the relation of linguistic intuition to linguistic competence that defends the view, widely held among linguists, that intuition data are a fairly direct expression of linguistic competence and as such are of the right sort to serve as evidence in linguistic theorizing.

1. Introduction

Linguistics is unique -- some would say notorious -- among the cognitive sciences for its reliance on intuition data.[2] As Fiengo (2003:253) puts it, 'Intuitions, with the contents they have, are the data of Linguistics'. More than a few linguists have been uneasy about this reliance, preferring to view it as a currently useful but ultimately dispensable expedient (see, e.g., Chomsky 1969:56, 81; Marantz 2005:435). Some of this uneasiness stems from the fact that the linguistic intuitions on which linguists rely are invariably their own: Some linguists worry that their theoretical commitments cannot help but infect their intuitions, rendering them at very least unreliable (see, e.g., Labov 1972:199; Wasow & Arnold 2005:495).[3] Other linguists

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[1] This paper has benefited from helpful criticisms and suggestions from a number of people, most notably John Collins, Michael Devitt, Frances Egan, Alvin Goldman, and Barry Smith. A distant ancestor of this paper was presented to the 2008 Dubrovnik Conference on the Philosophy of Linguistics.

[2] See Schütze 1996 and Ludlow 2011 for a catalogue of the sorts of intuition judgments on which linguists rely in their theorizing.

[3] Schütze (1996:38-9) offers the following illustration: A widely cited paper by Lasnik & Saito (1984) judged sentences such as *Why do you think that he left?* to be ambiguous, holding that the *why* can

have been downright skeptical of their field's reliance on intuition data, arguing that intuition data are unreliable because they are the product of multiple interacting causes and as such don't provide clear evidence of the linguistic competence that it is the goal of linguistic theory to characterize (see, e.g., Bresnan 2007:75; Gibson & Fedorenko 2010). So-called 'experimental' syntacticians argue that rather than rely on linguistic intuitions, linguists should rely exclusively on observational data regarding the sentences that speakers actually produce. But these worries aside, arguably much more of the uneasiness about reliance on intuition data stems from the *skeptical worry*, which will be my focus here, that linguistic intuitions are by their very nature not what linguists take them to be, viz., the product of linguistic competence, and hence cannot be evidence for a theory of that competence. Those taken by this skeptical worry point out that it is far from clear just what the connection is between linguistic intuition and linguistic competence such that the former can plausibly be held to provide reliable empirical data for linguists' theories of the latter.

Until quite recently more than a few linguists have managed to avoid these unpleasant worries by embracing the view that linguistic intuitions derive *directly* from the grammars for which they are data, thereby apparently underwriting their evidential status. Much of the attraction of this view seems to have rested on the once widely held belief that linguistic knowledge was embodied in competent

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question either the reason for thinking or the reason for leaving. Aoun et al. (1987) , writing three years later, held these same sentences to be unambiguous, permitting only the first reading and offered an extended explanation of why such sentences might seem to permit the excluded latter reading. Lasnik & Saito's theory predicted that such sentences are ambiguous in the way described, whereas Aoun et al.'s theory predicted that they are not.

speakers in the form of explicitly represented grammatical rules and principles: the idea was the linguistic intuitions were in some fashion *deduced* from these rules and principles. Thus, for example, Graves et al. (1973:325) put the view this way: 'The untutored speaker's [explicit knowledge that] certain sentences have certain grammatical properties … [is explained by] the positing of a tacit deduction from tacitly known principles'. This view of the relation of linguistic intuition to linguistic competence was, for reasons described below, never plausible, but it really only fell out of general favor with the demise of the notion that knowing a language was a matter of having an explicit mental representation of the language which speakers of that language consult and use in the course of language production and understanding. The demise of this notion, which had its roots in an influential representationalist philosophical account of propositional attitudes championed by Jerry Fodor (1987) and others, only reinforced uneasiness about relying on intuition data.

There are to be sure methodological issues having to do with the collection and use of intuition data, e.g., issues that have to do with priming and framing effects on speakers' linguistic intuitions. But these are not the issues that will occupy me here. I am concerned rather with skeptical worries that the intuition data on which linguists rely might in principle not be of a sort that can provide evidence regarding linguistic competence. I do not share these skeptical worries and am therefore interested in providing an account of the relation of linguistic intuitions to linguistic competence that will go some way towards assuaging these

worries, though without presuming a dubious deductive account of the sort once endorsed by representationalists such as Fodor.

Providing an account of the relation of linguistic intuitions to linguistic competence has recently become all the more pressing in the wake of criticisms by so-called 'experimental' philosophers of the role of intuitions in normative ethics, analytic epistemology, philosophy of language, and even philosophy of mind. It is probably only a matter of time before these philosophers turn their attention to linguistics proper, arguing that it too suffers irremediably from an uncritical reliance on intuition data. The skeptical worries raised by experimental philosophers echo worries raised independently by proponents of so-called 'experimental syntax', who advocate an experimental/observational approach to syntactic theorizing. These linguists are also skeptical of the notion that intuition data provides evidence for theories of linguistic competence (for critical discussion of these worries, see Phillips 2009).

In developing my account of the relation of linguistic intuition to linguistic competence, I use as a foil two different accounts that Michael Devitt discusses in his *Ignorance of Language* (2006a), one the account that he dubs the 'standard picture', and the other the intuitions-as-behavioral-observations account (the 'observationalist' account, for short) that he proposes in its stead. But before turning to these accounts, let me first remind you of the potential skeptical challenge from experimental philosophy.

2. <u>The Skeptical Challenge from Experimental Philosophy</u>

The challenge from experimental philosophy has thus far been directed only against philosophers who defend their philosophical views largely, if not exclusively, by appeal to intuition. The intuitions in question typically have to do with whether some described example or case, real or imagined, falls under the particular concept under philosophical examination, where these concepts include those of moral permissibility, intentional action, justification, knowledge, and reference. Thus, for example, moral philosophers might appeal to intuitions about so-called trolley cases in order to develop an account of moral acceptability; epistemologists might appeal to intuitions about Gettier cases in order to defeat a proposed analysis of knowledge as justified true belief; and philosophers of language might appeal to intuitions about Kripke's famous Schmidt-Gödel case in order to argue against a descriptivist theory of proper names.

The complaints from experimental philosophers are basically two: *First*, they argue that relying on intuition data is methodologically suspect because such data are vulnerable to, and indeed can often be shown to be infected by such phenomena as cultural bias, socioeconomic bias, framing effects, and priming effects, all of which serve to impugn the reliability of such data.   Thus, experimental philosophers have presented survey results which purport to document that philosophers' intuitions do in fact exhibit these vulnerabilities. *Second*, and more pertinent for present purposes, experimental philosophers argue that even if intuition data were collected and used in a manner sensitive to these vulnerabilities, it is not at all clear how to construe claims grounded on such data.   These

philosophers argue that while these claims are invariably presented as necessary truths of one sort or another, there is little reason to suppose that they are anything more than expressions of the particular cultural-philosophical views of those whose intuitions they express.   Thus, for example, Nichols, Stich, & Weinberg (2003:235) claim that epistemologists who rely on intuitions 'have chosen to be ethnographers; what they are doing is *ethno-epistemology*'.   This second complaint, it should be noted, has nothing in particular to do with worries about the intersubjective (or cross-situational intrasubjective) reliability of intuition data, which are the focus of the first complaint. Moreover, this complaint is not one that finds its ground in the surveys of folk intuitions that are the 'experiments' of experimental philosophers. These are worries that might be raised by anyone puzzled by the assumption that intuitions could provide evidence for necessary truths about moral permissibility, moral responsibility, and the like. Intuitions, no matter how widely shared they may be, seem unable to provide evidence for such truths. The skeptical worries voiced in this second complaint can be assuaged only by an account of the relation of these intuitions to the necessary truths for which they are supposedly evidence.

The complaints that one might anticipate from experimental philosophers regarding linguists' reliance on intuitions are similar: On the one hand, there are questions about the reliability of intuition data, given the way that such data are presently collected and used. On the other hand, there is the question about whether a linguistics that relies almost exclusively on intuition data can be anything more than a kind of ethno-linguistics, i.e., a linguistics that merely reports and precisifies the intuitive linguistic theory of the native speakers from whom the

intuition data are collected. Why suppose that such data are the right sort of evidence for a scientific theory of linguistic competence? This last worry gathers added force from the well-attested observation that competence for linguistic judgments of the sort that linguists attempt to elicit from informants is not an invariant concomitant with linguistic competence. It invariably lags linguistic competence developmentally (Schütze, 1996:89-97); moreover, unlike linguistic competence, it is strongly correlated with literacy and formal education (*Ibid*.:113-28).

The fundamental challenge, then, from experimental philosophy (as well as from experimental syntax, which raises similar worries) is to establish that given its reliance on intuition data, linguistics is more than mere ethno-linguistics, more than a report on informants' folk linguistic theory of the language they speak. To answer this skeptical challenge one must spell out the connection of linguistic intuition to linguistic competence in such a way as to demonstrate that the former is a reliable manifestation of the latter such that theories based on intuition data can legitimately claim to be scientific theories of linguistic competence.

3. The 'Standard Picture' (according to Devitt)

Devitt (2006a) attributes to many linguists, notably Chomskian generative linguists, what he calls the 'standard picture' of the relation of linguistic intuition to linguistic competence, which were it correct would vitiate skeptical worries regarding the role of intuition data in linguistic theorizing. On this picture linguistic intuitions are said to be the 'voice of competence' in the sense of being a *direct* expression of linguistic

competence, largely unmediated by other cognitive processes. As Devitt describes it, the 'standard picture' embodies two basic claims:

> (i)   Competent speakers of a language possess an explicit mental representation of their language, consisting of the rules and principles that a correct grammar for that language would attribute to that speaker [this is what Devitt calls the 'Representational Thesis RT'], and

> (ii)   Speakers *derive* their linguistic intuitions from this explicitly represented grammar by means of a deductive computational process, thereby guaranteeing that linguistic intuitions provide good evidence for the linguistic competence that they express.

Many generative linguists (e.g., Graves et al. 1973, mentioned above) once defended, or at least assumed, Devitt's 'standard picture'. And Chomsky and his philosopher friends have certainly said things that seem to suggest it. For example, Chomsky (1986:270) says, 'It seems reasonably clear, both in principle and in many specific cases, how unconscious knowledge issues in conscious knowledge […]. It follows by computations similar to straight deduction', and Fodor (1981:200-1) says, 'We can use intuitions to confirm grammars because grammars are internally represented and actually contribute to the etiology of the speaker/hearer's intuitive judgments'.

But this 'standard picture' is in fact quite implausible as an account of the relation of linguistic intuitions to linguistic competence, for it supposes that linguistic competence consists in (or at least involves) having an explicit representation of one's language which one uses in language production and comprehension. The idea here is that possession of such a representation enables competent speakers to pair sounds with meanings, specifically the phonological

form PF of an arbitrary sentence of their language with logical form LF of that sentence, such that given the PF of an arbitrary sentence the competent speaker could recover its LF (language comprehension), or given the LF of an arbitrary sentence the competent speaker could recover its PF (language production).   Never mind that grammars of the sort made available by linguistic theory are in general provably not suited to accomplish such a task, especially not by means of any deductive process.   The difficulty here is that, formally speaking, generative grammars provide a mapping from lexical items to ordered sound-meaning pairs <PF, LF>, not a mapping from one member of a given pair to the other, and rarely can grammars be used in a computationally efficient way, if used at all, to determine whether a given PF is paired with some LF, or vice-versa. But even if language production and comprehension did work this way, linguistic intuition (as Devitt correctly emphasizes) involves more than simply pairing a sentence with its meaning. For the intuition is a judgment that has as its content the proposition that the sentence or expression has a certain linguistic property, e.g., is acceptable, is ambiguous, permits a certain reading of the quantifiers in the sentence.[4] Put another way, linguistic intuitions are judgments of the form 'such-and-such linguistic expression has property P' (or 'stands in relation R to some other linguistic expression'); they are judgments to the effect, e.g., that the sentence *visiting relatives can be boring* is ambiguous, that reflexive pronoun *himself* in the sentence *John believes that Bill shaves himself* must refer to Bill. The language

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[4] In describing intuitions as judgments, I don't intend to preclude that they might, as Textor (2009) argues, be better described as 'seemings', i.e., as reports of the way certain linguistic expressions unreflectively strike one (as unacceptable, ambiguous, etc.). Nothing here, so far as I can see, turns on this.

faculty, however it does what it does, is not in the business of making judgments of any kind: given a sentence, it simply delivers a meaning, or given a meaning, it produces a sentence that expresses that meaning. So the picture looks pretty implausible.

All this said, it is questionable how many Chomskian linguists (as opposed perhaps to some of their philosopher sidekicks) seriously endorsed Devitt's 'standard picture'.[5] Linguists were to be sure worried about the methodological issues surrounding the field's reliance on intuition data, but few imagined that these worries, much less the more serious skeptical worries, are somehow swept away by talk of linguistic intuitions being derived directly by some sort of deductive process, for the simple reason that the picture, vague as it is, is too implausible. Chomsky (1986), for example, is quite clear that despite his (and other linguists') talk of linguistic judgments being 'derived' or 'deduced' directly from one's grammar (knowledge of language, I-language, etc.) such talk is mere pretense:

> In actual practice, linguistics as a discipline is characterized by attention to certain kinds of evidence that are, for the moment readily accessible and informative, largely judgments of native speakers. Each such judgment is, in fact, the result of an experiment, one that is poorly designed but rich in the evidence it provides. In practice, we tend to operate on the assumption, or pretense, that these informant judgments give us 'direct evidence' as to the structure of the I-language, but, of course, this is only a tentative and inexact working hypothesis, and any skilled practitioner has at his or her disposal an armory of techniques to help compensate for the errors introduced. In general, informant judgments do not reflect the structure of language directly. (1986:36)

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[5] Devitt concedes as much when he acknowledges many linguists reject his claim (i) in favor of a view according to which grammars are not explicitly represented but only 'embodied', which rightly leads him to wonder how these linguists conceive of the relation of linguistic intuition to linguistic competence. Clearly the relation cannot be one of deduction.

The pretense is innocuous precisely because most linguists recognize that (i) informant judgments are *not* direct reflections of linguistic competence, (ii) these judgments are vulnerable to various sorts of error, and thus (iii) linguists must be careful to compensate for these errors. The crucial point that these linguists wish to underscore in their talk of linguistic intuitions being 'derived' or 'deduced' is simply that the knowledge expressed by intuitive judgments is knowledge that a speaker has in virtue of their linguistic competence. That these linguists talk of the relation of linguistic intuition to linguistic competence in terms of deduction is rather natural if one thinks of linguistic competence in terms of knowledge: we often explain our judgments as derived from knowledge of general principles, as for example when we explain moral judgments about specific cases as entailed by general moral principles. But it should be clear that this 'standard picture' is not one that is likely to assuage any skeptical worries about linguistics' reliance on intuition data, precisely because of the inherent vagueness of talk about the specific knowledge expressed in linguistic judgments being derived or deduced from a more general knowledge of one's language. Claims to the effect that linguistic intuitions are derived or deduced from the speaker's knowledge of language are not offered by linguists as any sort of epistemological warrant for their field's heavy reliance on intuition data. At most talk of derivation or deduction expresses only one's confidence that linguistic intuitions provide reliable evidence regarding linguistic competence.

Virtually all linguists would today agree that the 'standard picture' offers little by way of an account of the relation of linguistic intuition to linguistic

competence sufficient to justify linguistics' reliance on intuition data. Most would

also agree both that the requisite account of this relation has yet to be provided and

that it will have to address two fundamental questions:

(i) What is the relation of linguistic intuitions to linguistic competence, and

(ii) On this relation, is linguistics' reliance on intuition data epistemically warranted?

4. Devitt's Observationalist Picture of the Relation of Linguistic Intuition to Linguistic Competence

It takes a bit of work to tease out from Devitt's *Ignorance of Language* (2006a) his

own picture of the relation of linguistic intuition to linguistic competence, but the

one that he sketches involves at least the following commitments:

(i) *Linguistic intuitions are empirical judgments about the linguistic properties of overt linguistic behavior produced by oneself and others.*[6]

(ii) *Linguistic intuitions differ from other empirical judgments only in being fairly immediate and unreflective.*[7]

(iii) *Linguistic competence produces the data for linguistic intuitions; it does not produce the intuitions themselves.*[8]

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[6] 'My claim is that intuitions are empirical unreflective judgments, *at least*' (2006a:103); linguistic intuitions are '*fairly immediate unreflective judgments* about semantic and syntactic properties of linguistic expressions, metalinguistic judgments about acceptability, grammaticality, ambiguity, coreference/binding, and the like' (2006a:95); they are '*judgments about* linguistic performances, not the performances themselves' (2006a:95).

[7] 'Intuitions are empirical theory-laden responses to phenomena, differing from many other responses only in being fairly immediate and unreflective, based on little if any conscious reasoning' (2006a:103).

[8] 'Linguistic competence supplies data for these intuitions, but the intuitions are not its voice' (2006a:120).

(iv)   *Linguistic intuitions/linguistic judgments are arrived at by reflection on publicly available overt linguistic behavior data.*[9]

(v)   *Linguistic competence provides a speaker access to data, but no special access to the truth about that data.*[10]

(vi)   *The linguistic intuitions of linguists themselves are particularly reliable, by virtue of their vast observational experience, guided by good theory.*[11]

The 'observationalist' picture of linguistic intuitions and their relation to linguistic competence that Devitt proposes is reasonably clear: Competent speakers of a language are immersed in a sea of overt linguistic behaviors, what Devitt calls 'linguistic performances', produced by themselves and others. Linguistic intuitions are empirical judgments about these linguistic behaviors, based on these speakers' observations of these behaviors. These empirical judgments are distinguished from other sorts of empirical observational judgments only in their relatively immediate and unreflective character.   In case we don't get the basic picture that Devitt is proposing, he describes Ilkka Niiniluoto (1981) as having urged a similar view,

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[9] 'Someone who has the relevant competence has ready access to a great data of data that are to be explained. She does not have to go out and look for data because her competence produces them. Not only that, she is surrounded by similarly competent people who also produce them. As a result, she is in a good position to go in for some central-processor reflection upon the data produced by herself and her associates' (2006a:106); 'the competent speaker has ready access to a great deal of linguistic data …: the competent speaker and her competent fellows produce linguistic data day in and day out. So she is surrounded by [linguistic] tokens …. So she is in a position to have well-based opinions by reflecting on these tokens' (2006a:108-9).

[10] A native speaker's linguistic intuitions 'have no special authority: although the speaker's competence gives her ready access to data, it does not give her Cartesian access to the truth about the data' (2006a:109).

[11]'The intuitions that linguists should mostly rely on are those of the linguists themselves because linguists are more expert. … As a result of their incessant observation of language, guided by good theory, linguists are reliable indicators of syntactic reality' (2006a:110).

namely, that 'linguistic intuition is … largely observational knowledge about language' (2006a:109n).[12]

There are a number of problems with Devitt's picture of linguistic intuitions as observational judgments about overt linguistic behavior:

First, many, if not most, of the specific sentences for which linguists elicit linguistic intuitions are ones that speakers would only rarely, if ever, have heard or had occasion to produce. Few of us, for example, have heard the interrogative sentence *Which are the students that the teacher asked whether they were are going on to college?* or the declarative sentence *there is a purple speckled lobster on the ceiling*. Despite being immersed in a sea of language, the competent speaker is likely to have little or no observation data, in any usual sense of that expression, about linguistic properties of these particular sentences. And yet speakers have firm linguistic intuitions about these sentences.

But how, then, on Devitt's observationalist picture is a speaker able to come to any judgments regarding these sentences? Devitt might be tempted to talk about this speaker's judgments being based on observational data about 'similar' sentences. But whatever a speaker's access to 'similar' sentences, what exactly is the similarity metric over these data by which she makes her judgment, if, as Devitt claims, the only thing that her language faculty supplies is data? How, e.g., on Devitt's picture does a subject come to judge on first hearing that the sentence *who is he eager to please?* is acceptable, but the sentence **who is he easy to please?*

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[12]At a couple of places in the book, Devitt seems to back away from this strongly observationalist picture of linguistic intuitions, suggesting a somewhat different role for linguistic competence than simply producing the overt behavioral data for central-processor reflection (see, e.g., 2006a:106; also Devitt 2006b:594, and Devitt 2010a:254), a crucial matter to which I will return later in the paper.

unacceptable, given that both *he is eager to please* and *he is eager to please* are superficially similar one to the other?   Observational data themselves don't provide this similarity metric -- the relevant similarities (in this case, dissimilarities) are unobservable. And neither does what Devitt calls the 'central-processor' provide it – it is, after all, a central processor with no special expertise in matters linguistic. The problem, again, is this: How does the competent speaker use the data to which she has access to form a judgment about a sentence she hasn't heard or produced? Devitt's talk of central-processor responses, observation, and the like simply labels the problem. It certainly looks as if, contrary to what Devitt claims, the language faculty must be doing something more than merely providing overt behavioral data for 'central-processor reflection'.

Second, speakers are notoriously unreliable at reporting accurately the precise words spoken by themselves or others, apparently because verbal memory typically stores only the semantic contents of sentences, and not the syntactic forms of the sentences that express these contents (see, e.g., Sachs 1967, Fodor, Bever & Garrett 1974). Given this, why suppose that even granting that competent speakers are immersed in a sea of data, they could do anything with these data? The basic point here is that physical access to linguistic data does not entail cognitive access to these data. Nevertheless, speakers do have linguistic intuitions. Speakers apparently come to their judgments in a way other than by reflecting on observed linguistic performances.

Devitt may suppose that the force of these first two problems is vitiated by the privileged role in linguistic theorizing that he accords to the intuitions of trained

linguists (see his commitment #6 above). Specifically, Devitt may suppose that

linguists, by their grasp of linguistics-theoretic concepts, have the relevant similarly

metric necessary to deal with novel examples (the first problem) and, by their

training, have the ability to remember the linguistic data to which they are exposed

(the second problem). Devitt cites Wisniewski (1998) in support of the privileged

status of linguists' intuitions,[13] but experimental findings cast doubt on the greater

reliability of expert intuition, at least insofar as linguistic intuitions are concerned.

Culbertson & Gross (2009), for example, find no statistically significant differences

between the intuition judgments of linguists and non-linguists, provided the latter

understand the task required of them in reporting their linguistic intuitions:[14]

> The relevant divide is in fact not between linguists and non-linguists, but
> rather between subjects with and without minimally sufficient task-specific
> knowledge. In particular, we show that subjects with at least some minimal
> exposure to or knowledge of such tasks tend to perform consistently with one
> another – greater knowledge of linguistics makes no further difference –
> while at the same time exhibiting markedly greater in-group consistently
> than those who have no previous exposure to or knowledge of such tasks and
> their goals.   (2009:722)

A *third* problem with Devitt's observationalist picture is this: If, as his

picture assumes, linguistic intuition is based on empirical observation of linguistic

behavior, then we should not expect to discover that speakers' linguistic intuitions

are in some cases systematically at variance with observed linguistic behavior. But

in fact we do. Indeed, subjects find certain sentences unacceptable that they

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[13] Wisniewski (1998:45): 'Researchers who study behavior and thought within an experimental
framework develop better intuitions about these phenomena than those of the intuition researchers
or lay people who do not study these phenomena with such a framework. The intuitions are better in
the sense that they are more likely to be correct when subjected to experimental testing'.

[14] See Devitt (2010b) for a response to Culberson & Gross.

themselves produce. Consider, for example, sentences involving *wanna* contraction across extracted subjects (e.g., **who do you wanna dance with you?*). Subjects report finding these sentences much less acceptable than sentences involving *wanna* contraction across extracted objects (e.g., *who do you wanna help?*), despite the fact that these very same subjects produce such sentences (Karins & Nagy 1993; Kweon & Bley-Vroman 2011). Given that linguistic intuition is sometimes at odds with observed linguistic behavior, even of the subjects producing the intuitions, it certainly looks as if intuition judgments are something other than judgments arrived at by reflection on publicly available overt linguistic behavior data.

A *fourth* problem with Devitt's picture, perhaps the most serious, is that linguistic intuitions seem to be precisely what Devitt denies they are, namely, the result of an exercise of linguistic competence. Here is a reason for thinking that this is so: Incompetent in Swahili as I am, I may nonetheless correctly judge that a certain Swahili sentence /*choo kiko wapi?*/ is an acceptable sentence of Swahili, both because I have learned the meaning of this sentence (*Where's the toilet?*) from a Swahili phrase book and now use it regularly in the course of my travels through East Africa to ask where is the toilet, and because as a field linguist I have observed that this sentence is standardly used by Swahili speakers to ask the same thing. It seems clear that my judgment here is *not* a linguistic intuition, indeed not even based on a linguistic intuition, despite the fact that this judgment enjoys the sort of observational support (from the linguistic performances of myself and others) that Devitt holds would qualify it as such. So why isn't my judgment here intuitive? Surely it is because it involves no exercise of linguistic competence in Swahili on my

part.   The point here is very general: what we call 'intuitions', whatever their domain, are judgments that arise out of an exercise of the relevant competence, not out of observation, such that if you lack the competence, you cannot have the intuitions, no matter how developed your observational skills. We can of course decide to use the term 'intuitions' differently, as Devitt effectively does, but then we are no longer talking about linguistic intuitions in the relevant sense, and any claims we make about these so-called 'intuitions' entail nothing as regards linguistic intuitions properly so-called or their role in linguistic theorizing.

Devitt might want to insist both that I am in fact competent in Swahili with respect to this single sentence and that my empirical observation that the sentence is an acceptable sentence of Swahili, with the meaning that it has, is an expression of that very limited competence. But this again is simply to insist without argument that there is no significant distinction between observation and intuition, one that fails to account for the fact that competent speakers of a language can recognize sentences that they have never before encountered to be sentences in that language, moreover, that they can know the meaning of (non-idiomatic) expressions that they have never before encountered. Such is not the case with my observation-based knowledge of the meaning of the Swahili sentence /*choo kiko wapi?*/. Devitt can call such knowledge 'intuitive', but it isn't intuitive in the relevant sense that points to a particular way in which, through an exercise of linguistic competence, speakers come to judgments about expressions in their language.

A *fifth* problem: Having denied that linguistic intuitions are the result of an exercise of linguistic competence, Devitt can distinguish intuitive judgments from

observational judgments more generally only by insisting on their immediate or unreflective character. But this is not what makes a judgment intuitive. Consider, for example, the conscious reflection and deliberation required to decide whether the following sentences are acceptable: *which man did you ask whether I saw at the park?* (from Marantz, 2005), or whether the quantifiers in the following sentence permit an intermediate scopal reading: *every teacher overhead the rumor that a student of mine cheated* (from Ludlow, 2011).[15] The basic point here is that many intuitive judgments are neither immediate nor unreflective. What makes a judgment intuitive seems to be two things: *First*, the judgment 'derives' from the competence in the sense that the judgment is not one that could be had by someone who was not a competent speaker of the language, no matter what this person's powers of observation or the empirical data available to him, precisely because lacking the competence the person wouldn't have the wherewithal for an *intuitive* judgment. And *second*, the judgment is the expression of a productive capacity for such judgments, one that the speaker has in virtue of his linguistic competence. This fifth problem, it should be noted, harkens back to the first of the problems with Devitt's picture, namely, the idea that the only thing that competence contributes is data for empirical judgment. Competence clearly does more.

5. <u>Linguistic Intuition and Linguistic Competence: An Alternative Picture</u>

What Devitt calls 'the standard picture' of linguistic intuition is untenable because it assumes implausibly that intuitive judgments derive directly from linguistic

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[15] An intermediate reading of this sentence would be something to the effect that for every teacher x, there is a student of mine y such that x overheard a rumor that y cheated.

competence in a supposedly deductive fashion. But Devitt's own observationalist picture is equally untenable because linguistic competence does more than simply produce linguistic behavioral data for observational judgment. So, again, our two basic questions: *How are we to understand the relation of linguistic intuition to linguistic competence*, and *what does a plausible account of this relation entail regarding reliance on intuition data in linguistic theorizing*? In developing an answer to these questions, let us remind ourselves of what we have learned from our examination of the two pictures that Devitt discusses.

First, *linguistic intuition seems to be essentially an exercise of linguistic competence*, not observation reports about overt linguistic behavior. It is as yet unclear just in what exactly being an exercise of linguistic competence comes to, but it is clear that linguistic judgments that aren't exercises of linguistic competence simply aren't intuitive judgments.

Second, *linguistic intuitions are not distinguished from other judgments by their relative immediacy or unreflectiveness; some require considerable reflection and deliberation*. Many of the intuitive judgments upon which linguists rely may in fact be relatively immediate and unreflective, but this is not an essential feature of such judgments.

Third, *linguistic intuitions are apriori judgments*, in the sense that they are judgments that competent speakers could in principle come to independently of experience. Linguistic intuitions could in principle be had, unimpaired, by an innately competent speaker who never had any access to what Devitt calls 'performance data'. Imagine a 'Swampman', molecule for molecule identical with

me, who suddenly springs into existence from some fortuitous combination of muck and slime, perhaps as a result of a lightning strike. I take it that Swampman would share my linguistic intuitions, despite having never had my sensory experiences. To say that linguistic intuitions are apriori in this sense is not, of course, to say that they are *in fact* had independently of any experience; clearly they are not. The claim is simply that they *could be* had independently of experience. And even if linguistic intuitions cannot be had independently of experience in the way that I am imagining Swampman could have them, it remains true, for the reasons given above, that in the usual case speakers have no particular prior sensory experience involving the specific sentences their intuitions are about. Linguistic intuitions are expressions of speakers' linguistic competence, even though the competence is itself grounded partly in experience.

Fourth, *linguistic intuitions are vulnerable to various sorts of perception-like errors*: priming effects, framing effects, perceptual illusions, etc. Just as it is impossible not to see the two lines in the Müller-Lyer illusion as incongruent, so it is impossible not to hear the sentence *many more people have been to Paris than I have* (from Smith 2006) as acceptable.   Presented without any embedding context, most subjects judge the garden-path sentence *the horse raced past the barn fell* unacceptable, but when primed by sentences such as *the horse that was raced past the barn fell* most judge it acceptable. Linguistic intuitions are presumably vulnerable perception-like errors because *the relation of intuition to competence is mediated by cognitive processes that are analogous to, if not the same as, those responsible for perceptual error*.

Fifth, *empirical research reveals that linguistic intuition lags linguistic competence developmentally*, such that children acquire the ability to speak a year or two before they begin to acquire, if they do, the capacity for linguistic intuitions. Empirical research, we noted, also reveals that linguistic intuition is highly correlated with literary and formal education. These facts suggest that *linguistic intuition involves the exercise not just of linguistic competence but of a competence (or competences) distinct from linguistic competence*.[16]

Sixth, *linguistic intuitions are judgments to the effect that the sentence or expression the intuition is about has a certain linguistic property*. As such, linguistic intuitions might predicate quite theoretical properties to the sentences the intuitions are about (e.g., that the sentence *that's the car that I wanted to know what you did with* violates the so-called *wh*-island constraint). But inasmuch as linguists are interested in using a speaker's linguistic intuitions as data for constructing a theory of that speaker's linguistic competence, as a matter of methodological principle linguists restrict their interest to intuitions that concern only those properties of sentences and expressions that competent speakers must grasp in order to recognize and understand (and perhaps produce) utterances in their language. Linguists are *not* interested in the linguistic theorizings of their informants. Thus, they elicit intuitions about acceptability, ambiguity, meaning, possible ways of construing quantified sentences, etc., but not about, e.g., the presence of *wh*-island constraint violations, because making the former sorts of judgment is part and parcel of linguistic competence.

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[16] It seems, for example, to be crucial for the development of a competence for linguistic intuition that one come to see language (and linguistic expressions) as objects for predication, something that formal education greatly facilitates.

So let me now try to pull these various observations together into a picture of linguistic intuition and its relation to linguistic competence. I will then go on to describe some recent empirical research that seems to support this picture. Our starting point is that linguistic intuitions are conscious assessments of the sentence (or linguistic expression) the intuition is about, based on what I have been calling an 'exercise' of linguistic competence. But just what is such an exercise, and how does it eventuate in the assessment that is the intuitive judgment? The crucial matter to be explained here is how linguistic competence manages to do more than simply provide data for, as Devitt puts it, 'central-processor reflection'. More specifically, though we shall see that this way of putting the matter is rather misleading, how does linguistic competence manage to provide the information content of the intuitive judgment (e.g., that the sentence is unacceptable or ambiguous)? Let us begin our answer to this question by focusing on the cognitive task facing subjects from whom linguistic intuitions are elicited.

The sentences for which linguistic intuitions are elicited are typically presented, shorn of all context, by a linguist to a native speaker for consideration, and this subject is asked whether the sentence is acceptable, ambiguous, admits of a certain reading of the quantifiers, or some such. In many, perhaps most cases, linguist and subject are one and the same, in which case the linguist simply 'considers' the sentence, asking herself whether the sentence has one or another property. The intuitive judgment, which is a datum for linguistic theorizing, reports the outcome of this informal 'experiment'.

The intuitive judgment is about the sentence, but the subject's linguistic competence is exercised, not on that sentence, but on an *utterance* of that sentence – typically *not* on an actual utterance of that sentence, but on a *virtual* utterance of that sentence. What goes on is this: the subject simply treats the sentence as if it were meaningfully uttered, something that native speakers are naturally disposed to do when confronted with any sentence or expression (or apparent sentence or expression) of their language. Presented with the test sentence, our subject attempts to process this sentence in the way she would process any uttered sentence of her language. Then on the basis of this attempted exercise of her linguistic competence, our subject assesses the result of this exercise of linguistic competence with respect to the relevant linguistic property.

But how, then, does the intuitive judgment arise, if not, as Devitt has it, from a bit of central processor reflection? As a first cut, the answer is this: certain linguistic properties of a sentence, specifically properties crucial to the successful processing of that sentence, are consciously *accessible* to a subject in the course of processing an utterance of that sentence, and these properties (including acceptability, ambiguity, and quantifier scope) are precisely the ones that informants report in the intuitive judgments that are of interest to the theorizing linguist. To say that these properties are consciously accessible is not to say that native speakers are always conscious of them. A speaker without linguistics training will typically become conscious of these properties, if at all, only when here is a glitch that prevents successful processing – cases, for example, in which a speaker realizes either that she can assign no meaning whatever to the utterance or

that from the way a conversation is unfolding she has misunderstood it.   In these cases a speaker may not only become aware of a processing glitch, but she may have some sense of what's gone wrong – e.g., that the sentence isn't one that she recognizes as a sentence of her language, that she has overlooked an ambiguity in the sentence, or that she has misconstrued the quantifiers in the sentence. As a result, she may be able to report that a certain sentence is 'unacceptable', 'not a good sentence', 'not said in the right way', 'ambiguous', or some such.   Speakers with some linguistics training, notably linguists, can often do a lot better: they are often able to access these properties even in cases where no glitches have arisen, not as Devitt would have it because they are able to deploy a vast body of observational data which they have at their fingertips, but rather because they have mastered certain elicitation techniques (discussed below) that facilitate conscious access to these properties. The point I want to insist on here, and later defend, is that the properties of sentences that get reported in linguistic are ones that are crucial to successful sentence processing and furthermore are ones that with appropriate training can be consciously accessed and reported. The particular words that a subject uses in formulating her linguistic intuitions are not important. What is important is this subject's conscious access to properties of the sentence that are crucial to the success or failure of the processing of this sentence and her ability to identify those properties. Crucially, this ability is not extrinsic to the comprehension process, i.e., something that only central processes would undertake, because monitoring the success or failure of the processing is an ongoing, intrinsic activity of both language production and comprehension. It is intrinsic because

monitoring sentence production and comprehension processes enables the speaker to continuously evaluate the various assumptions (about sentence acceptability and interpretation) that guide these processes, and where these assumptions turn out to be mistaken to correct them *on the fly*. Thus, for example, if I'm told that there is someone in my class that everyone likes, I may assume that there is some one person that satisfies that description until such time I am also told that one person likes Samantha, another Christa, at which point I quickly correct my misconstrual of the sentence's quantifier scopes, thereby opening myself to the possibility that other people in the class like still different people. Of course, subjects may be mistaken in their assessments e.g., judging the sentence *the horse raced past the barn fell* unacceptable and the sentence *many more people have been to Paris than I have* acceptable). But the crucial point here is that the content of these assessments, correct or incorrect as they may be, is tied closely to the very character of the subject's exercise of her linguistic competence, much more closely than Devitt's observationalist picture would suggest.

Of course, the language processes that are constitutive of the subject's linguistic competence don't produce as one of its outputs anything that expresses the informational content of the intuitive judgment – say, a sentence to that effect. As Devitt puts it, the language faculty is not in the business of delivering intuition judgments; its job is pairing sounds and meanings (PFs with LFs). Nevertheless, in doing the job that it does, the language faculty does monitor and make use of the information that intuition judgments report, although probably not in the terms that the subject chooses to report her intuitions. It is important here to distinguish,

as Devitt does not, between the information content of the intuition judgment that is of interest to the linguist and the particular words that a subject chooses to formulate that content: only the choice of words might be described as an exercise of central-processor reflection. The content of the judgment, however described, reports the subject's conscious awareness of the result of her exercise of linguistic competence on an utterance of the sentence that elicits the judgment, specifically whether she could assign a meaning to the sentence, whether on request she could assign two or more distinct meanings to it, whether on request she could 'get' a certain scopal reading of quantifiers, etc., all matters relevant to a successful processing of the utterance.

There is an important difference, then, between my proposal and Devitt's observationalist picture. On his picture, the exercise of linguistic competence does nothing more than produce observational data, specifically overt linguistic behavior, on which the subject's central processor then reflects and renders judgments. It is not part of his picture that *in the course of language processing* subjects make use of precisely the sorts of information that intuition judgments report and furthermore that these subjects are often able to report this information in the form of an intuition judgment. But this is precisely the sort of information native speakers have and use in the course of language processing: they are sensitive to their failures to assign a meaning to something someone said, because this is often a useful signal that one has misheard or misunderstood what was said; they are also sensitive to potential ambiguities, especially those that aren't contextually resolved, because they can use this information to reshape their words on the fly to remove

ambiguities (or in other cases to reinforce them). The crucial point here is that the practical demands of language use require sensitivity to precisely the information that intuition judgments report.

Devitt actually comes close at times to acknowledging that native speakers do in fact have just the sort of immediate access to information that I am describing:

> A normal competent speaker … uses herself as a guide to what the competent speaker would do. So she asks herself whether this expression is something she would say and what she would make of it if someone else said it.
> (2006a:109)

But his endorsement is clearly at odds with his stated observationalist position, since the subject's linguistic competence is clearly doing more here than providing data for central-processor reflection.[17] Devitt goes on to say, 'She [the normal competent speaker] does some central-processor reflection upon the datum to decide whether to apply her concept of grammaticality [sic] to the expression' (ibid). But Devitt overlooks the fact that the datum here is *not* the linguistic performance, but rather it is this subject's *answer* to the question she asks herself, namely, whether this is something she would say, something she can make sense of, questions that she answers *by means of an exercise of linguistic competence*, not by means of central-processor reflection. The very exercise of the subject's linguistic competence provides information about the applicability of certain language-processing relevant metalinguistic predicates. There may be some reflection on the part of subjects as to

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[17] Devitt cannot back too far away from this observationalist picture, because it is crucial to the central tenet of his book that linguistics, *as actually practiced*, is the scientific study of a certain class of objective symbol systems. As actually practiced, linguistics depends heavily on intuition data, so Devitt needs an account of linguistic intuitions according to which they can be reliable data for linguistics as he conceives it. Treating intuition data as observation data seems his only option, which is why he goes to such lengths to deny that linguistic competence does anything more than provide data for observation and 'central processor reflection'.

how to describe the experienced result of the exercise of linguistic competence (what Devitt calls 'central processor reflection'), but the conscious awareness of the results is not an observation in any usual sense of that word, certainly not the observation of overt linguistic behavior. And the result of this exercise of linguistic competence is not a behavior in any usual sense of that word either. There is simply the conscious knowledge of how the processing is going (or has gone), whether it has been derailed for one reason or another, and then an independent decision about how to describe it.

On the account I'm proposing, linguistic intuitions involve two actions on the part of the speaker who has the intuitions: (i) an attempted processing of the virtual utterance of the test sentence, and (ii) an assessment of the results of that exercise of competence. If linguistic intuition is to provide reliable data for linguistic theorizing about a speaker's linguistic competence, then *both* must be exercises of that competence. Clearly the first is such an exercise, but so too, I claim, is the second, provided that one restricts the assessment, as linguists in fact do, to those linguistic properties the assignment of which is part and parcel of everyday exercises of linguistic competence. Thus, for example, it is intrinsic to a speaker's everyday exercise of linguistic competence that they can (i) generally recognize sentences to be acceptable or unacceptable, (ii) generally recognize sentences to be ambiguous (or at least get the relevant reading in the context of utterance), (iii) generally recognize whether a quantified sentence admits of a certain scopal reading (or at least get the relevant scopal reading in the context of utterance). By contrast, it is not intrinsic to a speaker's everyday exercise of linguistic competence that this speaker can

recognize the reason for a sentence's unacceptability, e.g., because of memory limitations or a *wh*-island constraint violation. A linguist may have 'intuitions' regarding such reasons, but they are not data for linguistic theorizing, precisely because recognizing such reasons is not intrinsic to linguistic competence.

Treating the intuition-eliciting sentence as meaningfully uttered, even only virtually so, opens the way for the perception-like errors to which judgments expressive of linguistic intuitions are subject: Sentences are always uttered in a context, and this context of utterance is often crucial to our understanding of the utterance. In situations where the context of utterance is absent or underspecified (which is typically the case with the sentences for which intuitions are elicited), we fill out the context as best we can using our background knowledge, about (i) the speaker who utters the sentence, (ii) the likely context, (iii) the sentence-type to which the uttered sentence belongs, (iv) the usual sorts of situations in which sentences of this type are used, and so on. It is presumably this filling-in that makes the linguistic intuition vulnerable to certain perception-like errors. This filling-in would also explain priming effects, e.g., in affecting the acceptability of garden path sentences, as well as failures to recognize ambiguity. Thus, while linguistic intuition is an exercise of linguistic competence, the relation of intuition to competence is mediated by cognitive processes that fill out the context of utterance for the intuition-eliciting sentence.

We still need to show how the proposed account would explain the fact that competence for linguistic intuition lags the development of linguistic competence itself, as well as the former's relative dependence on formal education. The

problem here is this: competence for linguistic intuition requires a grasp of the relevant linguistic properties that are predicated in intuitive judgments, and so one might expect variation among subjects. But linguists, we said, restrict themselves to precisely those properties the tacit grasp of which is necessary for linguistic production and understanding. So how do we account for the observed variation in competence for linguistic intuition? Several factors seem to be in play. First, *competence for linguistic intuition judgment requires an ability to objectify one's language,* specifically to conceive of the intuition-eliciting sentence as an object of which certain linguistic properties can be predicated. Educated subjects can manage this task quite easily, but illiterate subjects often find it quite difficult (cf. Schutze 1996). Second, c*ompetence for linguistic intuition requires an understanding of the point of eliciting linguistic intuitions*, namely, to secure subjects' judgments about certain linguistic properties of sentences. This is an understanding that subjects unfamiliar with the idea that language might be a topic for scientific study will often lack (cf. Culbertson & Gross 2009). Third, *competence for linguistic intuition requires imaginative ability*. The linguistic intuitions that linguists want to elicit from subjects require an ability to imagine the different sorts of contexts in which the intuition-eliciting sentence might be used. This, as anyone who has taught an introductory linguistic course can attest, is an acquired skill. These abilities are found to differing degrees in subjects, with the consequence that elicited intuitions will be more or less reliable depending on subjects' possession of these abilities. The intuitions of linguists, not surprisingly, turn out to be quite reliable (cf. Phillips 2009, Sprouse & Almeida 2012), not as Devitt would have it because of their

theoretical expertise, but because as linguists they have developed the objectifying and imaginative abilities mentioned above that are recruited in the exercise of linguistic intuition.

A final point: the linguistic competence that is recruited and exercised in the course of linguistic intuition seems to involve primarily, if not exclusively, language comprehension, but as we will see below, it is a competence that crucially involves competence in production. Asked for their intuitions about a sentence, linguists sometimes say things like 'I wouldn't say that', but more often than not, they will say things like 'that doesn't sound good to me' or 'I can't get that reading', remarks that suggest that what is doing the work is their competence for language comprehension, not language production. Of course, in eliciting our own intuitions, we often say the sentence to ourselves, but the point here is not to exercise our competence in language production for the purpose of producing overt linguistic behavior, but simply to generate a (virtual) utterance of which we can then exercise our competence in language comprehension. This reliance on competence in comprehension may simply reflect the fact that production involves a much more complex interplay of competences other than linguistic competence, narrowly conceived.

So here schematically, I suggest, is the process by which linguistic intuitions are generated:

(i)   An input sentence is either presented via some sense modality or self-generated.

(ii)   The speaker constructs a virtual utterance of that sentence simply by treating the sentence as meaningfully uttered.

(iii)   In so doing the speaker implicitly embeds the sentence in a context of utterance that he/she supplies.

(iv)   The context supplied will depend on a number of different factors, all of which may introduce error.

(v)   The speaker then attempts to understand this utterance in the way that he/she would understand any utterance, assigning whatever meaning is appropriate given the supplied context.

(vi)   To the extent that the speaker is capable of objectifying the sentence uttered as an object with certain linguistic properties, this speaker will be able to report those properties which are relevant to understanding the sentence in the supplied context.

(vii)   To the extent that the speaker is able to imagine and supply different contexts, then to that extent the speaker will be able to recognize lexical, structural, and scopal ambiguities.

Finally, we return to *the crux question* with which we began: Why suppose that speaker intuitions thus generated provide data for linguistic theorizing about linguistic competence? The *answer*, I propose, is that because linguistic intuitions are generated by an exercise of linguistic competence, and such exercises are a generally reliable expression of the subject's linguistic competence, provided of course that the linguist controls for the sort of perception-like errors to which linguistic intuitions are vulnerable. And because such data are produced by an exercise of linguistic competence, its reliability should be amenable to verification by empirical observation of actual perceptual processing of sentences in their language. In fact, experimental observation typically *does* confirm the armchair intuitions of linguists (Phillips 2009).

6. <u>Some Suggestive Empirical Evidence</u>

The account I have presented of the relation of linguistic intuition to linguistic competence treats the former as an exercise of the latter, at least as regards the sort of intuition data that linguists take as evidence for their theories of linguistic competence. On this account, linguistic intuitions are not, as Devitt would have it, reports about observed linguistic behavior, but are instead reports about exercises of linguistic competence. They issue directly from the speaker's processes of language comprehension and production. At first blush this seems puzzling inasmuch as linguistic competence, as Devitt points out, seems not to be in the business of making judgments of the sort that these intuitions express. But recent empirical research into language comprehension and production suggests that the account I am proposing may not be at all puzzling inasmuch as information of the sort that linguistic intuitions report turns out to play a central role in language processing. Let me first describe this work and then explain how it seems to support my account.

Traditional accounts of language production and comprehension presume that these processes are essentially independent one from the other: production processes take a thought or message as input and produce as output a motor command that eventuates in a linguistic utterance that expresses that thought or message, and comprehension processes take a perceived utterance as input and produce as output the message that the utterance expresses. Plausible as these traditional accounts once seemed, they are unable to account for any number of empirical findings that suggest that production and comprehension processes are

tightly interwoven: activation within the motor cortex of the hearer of just those regions that would be active were this hearer to produce the speech sounds that she is perceiving; activation in the hearer of just those tongue and lip muscles that would be active were this hearer to produce the speech that she is perceiving; changes in the word perceived (e.g., *had* vs. *head*) as a function of a third party's manually stretching cheek muscles in the direction that producing these words requires; the pervasive practice of completing an interlocutor's sentences with an ease and quickness that suggests that the hearer had anticipated the words that the speaker was going to utter before she uttered them.[18]

These and other findings have led Pickering & Garrod (2007 and forthcoming) and others to propose that not only are comprehension and production processes much more closely integrated than traditional accounts presume, with production processes playing an active role in comprehension and comprehension processes playing an active role in production, but also, and more importantly for present purposes, that both sorts of processes involve the construction on the part of both speakers and hearers of so-called 'forward models' of the respective products of these processes, models by which both speakers and hearers predict *in advance of their actual production* the essential linguistic (syntactic, semantic, etc.) properties of the utterances about to be produced by themselves and others. In the case of language production, the speaker constructs a forward model of the utterance to be produced, which she then uses this to generate a predicted percept of that utterance; in the case of language comprehension, the hearer constructs, on the basis of covert imitation of what she has heard so far and

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[18] For discussion of these and other examples, see Pickering & Garrod 2007 and forthcoming.

also such other knowledge as she may bring to the conversational exchange, a

forward model of the utterance that she anticipates the speaker will produce and

then uses this to generate a predicted percept of that utterance. The basic idea here

is that language production and understanding is of a piece with action production

and perception more generally, where, as Pickering & Garrod (forthcoming: 1) put

it, summarizing the research of Wolpert (1997), Davidson & Wolpert (2005), and

others: 'actors construct forward models of their actions before they execute those

actions, and … perceivers of others' actions covertly imitate those actions and then

construct forward models of those actions'. Actors and perceivers then use these

forward models to make predictions about the actions they will perceive, which they

use to monitor and control *on the fly* their own actions or to anticipate the actions of

others, as the case may be. Here is Pickering & Garrod's summary of their

proposal:

> Speakers use forward production models of their utterances in the same way
> that actors use forward action models, constructing efference copies of their
> predicted utterance and comparing those copies with the output of the actual
> production implementer. […] listeners predict speakers' upcoming
> utterances by overtly imitating what they have uttered so far, deriving their
> underlying message, generating efference copies, and comparing those copies
> with the actual utterances when they occur.   (forthcoming: 30)

In language production, these forward models serve primarily a control

function, enabling an agent to monitor, and if necessary correct on the fly, motor

behavior that doesn't satisfy the predictions of the forward models (and hence,

presumably, the intentions of the speaker). In language comprehension, forward

models serve both to give the hearer a real-time check on their dynamic

understanding of what their interlocutor is saying as well as to enable the hearer to coordinate smoothly and quickly her conversational interchanges with her interlocutor (much in the way that forward modeling of action enables ballroom dancers to coordinate their bodily movements). Forward modeling, as Pickering & Garrod put it, enables us to 'get ahead of the game' by predicting what subjects, themselves or others, are about to do.[19]

Crucial to the role that forward models play in action production and perception, both linguistic and non-linguistic, is the ability of agents to detect matches and mismatches between predicted perceptions and actual perceptions. For it is on the basis of matches that we can be confident that we are doing what we intend to be doing or that we are understanding the actions we are perceiving. And it is only on the basis of *mis*match detection that we are able to recognize errors in our own actions and take corrective actions on the fly to correct or compensate for these errors, or to revise on the fly our interpretation of observed actions of another. Mismatch detection, if I can call it that, will not always be consciously accessible; we are not generally aware, for example, of the minute motor control corrections that we make in the course of a dynamic action like catching a baseball or even picking up a cup. But in cases of egregious mismatch we often are aware that the predicted percepts produced by our forward models do not match our actual percepts, and we

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[19] Pickering & Garrod (forthcoming) acknowledge that there is a place for what they call 'association' in action perception, where we predict the action of an agent on the basis of observational knowledge we have of that agent. Here, too, there can be mismatches between predicted actions and observed actions. Thus we may have a pretty good idea what someone is likely to say in a certain situation. But crucially for present purposes, predictions based on 'association' are not, in the way that forward modeling is, a reflection of linguistic competence, since they are not a direct product of the exercise of that competence. Moreover, these predictions don't make reference to specific linguistic properties in a way that would support the notion that they could be data for linguistic theorizing about a subject's linguistic competence.

may even have some rough sense of how the predicted percept deviates from the actual percept. Thus, for example, we may find ourselves brought up short when someone misuses a term, makes a gross grammatical error, or when we realize that we have misunderstood the reference of certain pronominals. By the same token, we may realize, often quite quickly, that we do not understand what our interlocutor is saying, leading us to cast about for an alternative interpretation -- a new forward model -- on which the percepts predicted by this forward model match our actual percepts. It is here, I suggest, that we find the source of the linguistic intuitions on which linguists rely, and concomitantly a justification for relying on these intuitions as evidence for the nature of our linguistic competence.

If the sort of account that Pickering & Garrod lay out is largely correct, then both production and comprehension involve the extensive use of prediction. When these predictions are not borne out, and when furthermore both the fact of mismatch and the character of the mismatch rise to consciousness, these can become the stuff of linguistic intuition. And also for the case of where the predictions are borne out, in which case one knows (at least presumes) by virtue of the fact that there is no mismatch that the perceived utterance was not defective, at least not defective in a way that the forward model which predicts the salient linguistic properties of the utterance would detect. The predicted properties, it seems, turn out to be just the properties that linguistic intuition judgments report, viz., properties of the utterance (and uttered sentence) that are essential to successful communication.

Crucially here, the source of linguistic intuition is a direct expression of our linguistic competence, specifically the ability which we have in virtue of our linguistic competence to construct a forward model of the linguistic properties of our own and others' linguistic productions. Thus, in the case where we ask ourselves whether a given sentence is acceptable, whether it is 'something we would say', the answer is 'no' if an utterance of the sentence is not one that the exercise of *our* linguistic competence produces a predicted percept that we could compare against an actual percept of that utterance. Thus, for example, someone unfamiliar with garden-path sentence such as *the horse raced past the barn fell* will probably perceive the sentence as unacceptable, because her covert imitation of the sentence does not result in an forward model with the linguistic properties that she would associate with any sentence of her language. Instead the predicted percept is of a sentence *the horse raced past the barn*, followed by the unattached verb *fell*. Of course, if this person were primed appropriately (with sentences such as *the horse that was raced past the barn fell* or *the canoe that was floated down the river sank*), then she might find the sentence acceptable, presumably because she would be able to generate a forward model with semantic, syntactic, and phonological properties appropriate to a sentence of her language. In other cases, finding a sentence acceptable and attributing an appropriate semantic interpretation to the sentence will involve being able to embed the sentence in an appropriate virtual context of utterance, this being an extra-linguistic ability which, as I mentioned above, by training most linguists come to possess. Recognizing scopal ambiguities seems to be an exercise of just this sort: knowing the sort of interpretations that multiply

quantified sentences can permit, one imagines different contexts of utterance and then asks for each of these contexts whether an utterance of the sentence in that context permits different interpretations of the quantifiers.   Mistakenly construing as acceptable certain sentences that are in fact unacceptable (such as *many more people have been to Paris than I have*) raises more difficult questions, which I won't attempt to answer here, though perhaps our failure to recognize the unacceptability of such sentences show us something about the character of the forward models we produce in the course of language comprehension, just as our failure to recognize the impossibility of so-called impossible figures (such as the much-studied two-pronged trident) presumably shows us something about the character of the representations that we produce in visual perception. Specifically, such examples may show us that our construction of forward models is a dynamic but only locally constrained process, such that we count ourselves successful in understanding a sentence provided we are able to assign an interpretation to all parts of the sentence, even if assigned interpretations are not themselves mutually consistent.

The details of accounts of the sort developed by Pickering & Garrod are not essential to my proposal. The crucial point that I need from these accounts is that both language production and comprehension involve a lot of active prediction of produced and perceived utterances. To this I must add the assumption that gross mismatches between what's predicted and what's actually produced are often consciously accessible to subjects, such that these subjects can report these results in the form of linguistic intuitions.[20] And because these intuition judgments report the

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[20] There has been considerable EEG research on ERP (event-related potential) correlates in sentence comprehension, in particular of P600 effects associated with the perception of syntactically and

result of an exercise of linguistic competence, they can serve as data for linguistic theorizing about that competence. Of course, to say this is not to say just how the linguistic competence so evidenced is to be characterized, specifically whether it should take the form of a Chomskyian generative grammar. The point here is simply that linguistic intuitions are not observation reports; they are rather reports of the results of an exercise of linguistic competence, whatever the particular words that the informant may choose to express these intuitions. That this is so has an important added consequence: it provides support for the widely held assumption that the subject matter of linguistics is native speakers' linguistic competence, and not as Devitt would have it the properties of certain objectively existing symbol systems. Given that linguistic competence is the subject matter of linguistics, it is hardly surprising that linguists should rely heavily on intuition data that taps this competence.

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semantically anomalous sentences (e.g., van Herten 2005), including garden-path sentences, effects that may reflect the operation of sentence comprehension monitoring processes. But there is, so far as I am aware, little research tying ERP correlates to conscious awareness of the anomalous that evoke these correlates.

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