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Andrea Bianchi *Editor*

Language and Reality from a Naturalistic Perspective

Themes from Michael Devitt

Springer

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Andrea Bianchi is an associate professor at the University of Parma. He has published a number of papers on various topics in philosophy of language and philosophy of mind, and is especially interested in foundational issues concerning language. His current research focuses on the relationships between language and thought and the nature of the primal semantic relation, reference. Among other things, he has edited *On Reference* (Oxford University Press 2015).

Chapter 1
Introduction – Michael Devitt at Eighty

Andrea Bianchi

It is difficult to deny, I believe, that during the last forty years or so Michael Devitt has been a leading philosopher in the analytic field. The purpose of this volume is to celebrate his many important contributions to philosophy on the occasion of his eightieth birthday.

Born to Australians in Kuala Lumpur, Malaysia, Devitt was initially raised in Sydney – and anyone who has had the chance to meet him knows just how Australian he is – but at the age of eight moved to England, where he spent all of his youth. There, after a passionate reading of Russell's *The Problems of Philosophy*, he started to become interested in philosophy. Back in Australia for various reasons, in 1962 he enrolled at the University of Sydney, where he majored in philosophy and psychology. In 1967 he moved to the United States (an unprecedented choice for an Australian philosopher) to take a Ph.D. in philosophy at Harvard University, where he had W.V. Quine as his supervisor and Hilary Putnam among his teachers. Back in Australia again in 1971, he taught at the University of Sydney for seventeen years, before returning to the United States to occupy a position first, in 1988, at the University of Maryland and then, in 1999, at CUNY's Graduate Center, which he contributed to making one of the top places for studying, and doing research in, philosophy. A tireless traveler, throughout his career Devitt continuously gave talks and participated in conferences all around the world, disseminating ideas within the philosophical community, fostering the philosophical debate, and building deep intellectual as well as human relationships everywhere.

Together with Quine, from whom he inherited his unabashed naturalism and the animadversion to the *a priori*, and Putnam, a thinker who had a deep influence on Devitt's philosophical development was Saul Kripke. In fact, in 1967 Devitt attended

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a series of lectures by the young Kripke at Harvard, which anticipated those on naming and necessity given at Princeton University in 1970 – as he likes to recall, he missed only one of them to take part in a rally against the Vietnam war. Impressed by them – he was among the first to realize how revolutionary Kripke's ideas were –, Devitt decided to work on the semantics of proper names and other singular terms (a topic to which he had been already introduced by C.B. Martin in Sydney) and elaborated his causal theory of reference, which brought him international fame. His Ph.D. dissertation, *The Semantics of Proper Names: A Causal Theory* (1972), was devoted to it, as well as his first philosophical article, "Singular Terms" (1974), his first book, *Designation* (1981), and dozens of later publications. In the following years, Devitt defended the related, and "shocking," idea that meanings can be causal, non-descriptive, modes of presentation, and began to be interested in the more general issue of the nature of language. This led him to argue, first, in *Ignorance of Language* (2006), against Chomskyan orthodoxy, claiming that languages are external rather than internal; and, second, in *Overlooking Conventions*, which is about to appear for Springer, against various forms of contextualism in the philosophy of language. On philosophy of language he also wrote, together with one of the contributors to this volume, Kim Sterelny, an opinionated and very successful introduction, *Language and Reality* (1987), whose title (which he did not like) inspired that of this book (which, alas, he likes no better).[1]

But Devitt's philosophical interests extend way beyond philosophy of language. He is famous for vigorously defending realism (in his second, successful, book, *Realism and Truth*, 1984), against various, once trendy, forms of constructivism – from Kant through Goodman and the "renegade" Putnam to post-modernism –, which are less trendy now perhaps thanks to his criticisms too. Moreover, he has always been interested in methodology and metaphilosophy: he has tried to get clear about the role and nature of intuitions, he has criticized the widespread idea that we may have *a priori* knowledge from a naturalistic perspective, and he has insisted on *Putting Metaphysics First*, as the title of a collection of his essays (2010) declares. And he has also contributed to philosophy of mind, advocating a version of the representational theory of mind, and, more recently, to philosophy of biology, where he has argued in favor of a version of biological essentialism.

I first met Devitt in April 2005. I had just come back to Italy from Los Angeles, where I had spent one year doing research at UCLA after finishing my graduate studies. Invited by the late Eva Picardi, he and Stephen Neale came to Bologna, the city where I was living at the time, to discuss the referential use of definite descriptions, a topic made famous by Keith Donnellan. I admit that I was quite surprised to discover that even outside California people were able to say sensible things on the subject. However, my human and intellectual relationship with Michael did not begin until some years later, when, in September 2009, we were both speaking at a

[1] Just for the record, Devitt and Sterelny wanted to call their book *Language, Mind, and Everything*, inspired on the one hand by the opening of Quine's "On What There Is" and on the other by the Ultimate Question of Life, the Universe, and Everything in Douglas Adams' *The Hitchhiker's Guide to the Galaxy*. The publisher found the title too jocular.

conference on meaning organized by Alex Burri in Erfurt, Germany. We started to argue about reference, and we are not through with it yet. Afterwards, Devitt came various times to Parma (because of the quality of its food, he would probably gloss), to give talks and take part in workshops and conferences at my university. We have also frequently met elsewhere: in Bologna, in Rome, a couple of times in Barcelona thanks to another of the contributors to this volume, Genoveva Martí, a couple of times in Dubrovnik. And, more recently, in his wonderful house ("Versailles on Hudson"!) in Upstate New York. Although we disagree on various issues, as my contribution to this volume also witnesses, on each of these occasions I learned a lot from him. And, of course, it was always fun.

Most, if not all, contributors to this volume came to know Devitt much earlier than me. All renowned philosophers from all over the world, they are former students or colleagues, but first of all friends, of his. And they have all used the chance offered to them by this celebration of his eightieth birthday to add another twist to their, often long-lasting, intellectual exchange with him, engaging with many aspects of his philosophical work.

As should have become clear from what I have written so far, Devitt likes to argue, or, as they colorfully put it in Australia, "to stir the possum" (*Stirring the Possum* was indeed his suggestion for the title of this volume, a suggestion which, to his dismay, was eventually rejected because of its potential obscurity to non-Australian readers). Philosophy advances this way, he says. Thus, he wrote extensive replies to all the contributions to this volume, which, organized, like the contributions themselves, into five parts (*Philosophy of Linguistics*, *Theory of Reference*, *Theory of Meaning*, *Methodology*, and *Metaphysics*), are collected at the end of it and reveal his current stand on many of the issues he has been interested in during his long career. And I am pretty sure that the show will go on: many of these exchanges will continue, back and forth, for years. Thanks, Michael!

Part I
Philosophy of Linguistics

Chapter 2
Invariance as the Mark of the Psychological Reality of Language

John Collins

> *Invariants are the concepts of which science speaks in the same way as ordinary language speaks of "things", and which it provides with names as if they were ordinary things.*
>
> Born (1953: 149)

Abstract Devitt articulates and defends what he calls the 'linguistic conception' of generative linguistics, where this position stands in contrast to the prevailing 'psychologistic conception' of Chomsky and generative linguists generally. I shall argue that the very idea of anti-psychologism *vis-à-vis* generative linguistics is premised upon a misunderstanding, *viz.*, the thought that there are linguistic phenomena as such, which a linguistic theory may target directly, with psychological phenomena being targeted only indirectly. This thought is incorrect, for the ontology of a theory is ultimately what is invariant over and essential to the explanations the theory affords. In this light, linguistic theory is about psychological phenomena because the psychological states of speaker-hearers are the invariances of linguistic explanation, and there are no such invariances that involve externalia. What ultimately counts as psychological itself is partly determined by the very kind of explanations our best theories offer. In a nutshell, the explanations of generative theories neither entail nor presuppose an external linguistic reality, but do presuppose and entail a system of internal mind/brain states the theories seek to characterise.

Keywords Noam Chomsky · Realism · Linguistic competence · Psychologism · Michael Devitt · Linguistic intuitions · Mental processes · I-language

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2.1 Introduction

The major meta-theoretical issue throughout the history of generative linguistics has been the ontological status or 'reality' of the posits of the various generative theories. The received view is that generative linguistics is a branch of psychology, a component of the cognitive sciences. In this light, if taken to be true, a given theory is read as specifying various 'psychologically real' properties, rather than properties of mind-external entities however else construed (social artefacts, platonic entities, etc.). Michael Devitt's book, *Ignorance of Language* (2006a), is the most developed and philosophically sophisticated assault on this received view, reflecting but improving upon the earlier attitudes of Katz (1981), Soames (1984, 1985), Katz and Postal (1991), Cowie (1999), and numerous others.

Devitt articulates and defends what he calls the 'linguistic conception' of generative linguistics, where this position stands in contrast to the prevailing 'psychologistic conception' of Chomsky and generative linguists generally. Such anti-psychologism amounts to the claim that generative theories are really about an external language such that, in the first instance, the theories' explanations pertain to the putative externalia that constitute the language, not the psychological (internal) states of speaker-hearers.

I shall argue that the very idea of anti-psychologism *vis-à-vis* generative linguistics is premised upon a misunderstanding, *viz*., the thought that there are linguistic phenomena as such, which a linguistic theory may target directly, with psychological phenomena being targeted only indirectly. This thought is incorrect, for the ontology of a theory is ultimately what is invariant over and essential to the explanations the theory affords. In this light, linguistic theory is about psychological phenomena because the psychological states of speaker-hearers are the invariances of linguistic explanation, and there are no such invariances that involve externalia. What ultimately counts as psychological itself is partly determined by the very kind of explanations our best theories offer. In a nutshell, the explanations of generative theories neither entail nor presuppose an external linguistic reality, but do presuppose and entail a system of internal mind/brain states the theories seek to characterise.[1]

Devitt's book has attracted some strong criticism, but largely misdirected, according to Devitt, for the critics uniformly neglect his 'master argument'.[2] I

[1] Some positions admit both externalist and internalist commitments, such as those articulated by George (1989) and Higginbotham (1991). By the lights of the arguments to follow, the externalist aspects of such positions are questionable insofar as they flow from the kind of reasoning that informs the straightforward externalist positions. There are other positions that defend the notion of an external language in opposition to the generative approach, but these tend to be animated by the kind of concerns Devitt makes explicit (e.g., Lewis 1975; Wiggins 1997).

[2] Thus: 'none of [my] critics pays much attention to my *argument* for rejecting the psychological conception. The failure to address arguments against the psychological conception is traditional' (Devitt 2006b: 574; cp. 2006a: 8). The critics Devitt has in mind are Collins (2006), Matthews (2006), and Smith (2006). Devitt repeated his charge at an 'Author meets his critics' session at the

shall (i) reconstruct and carefully analyse Devitt's 'master argument', which, according to Devitt, has so confounded his critics, and (ii) question its two principal premises.

First, though, we need to address how we ought to understand 'psychological reality' and 'reality' more generally, in the context of a theoretical inquiry.

2.2 The Very Idea of 'Psychological Reality'

Following Chomsky, generative linguistics is broadly conceived by its practitioners to be a branch of psychology, ultimately human biology. This conception rests on the notion that the human language capacity is a biophysical phenomenon, which, of course, gives rise to complex communicative, social, and historical arrangements; indeed, it is hardly implausible to think that human culture largely depends upon our shared linguistic capacity. Generative theories, though, seek to abstract and idealise from such massive interaction effects in order to target a supposed distinctive core linguistic capacity.[3] Thus, generative linguistics, in essential concert with other disciplines, seeks to explain the development and function of this capacity as an aspect of the human mind/brain. Such is what I mean by 'psychologism' in the linguistic realm. Of course, whether past or current theories have been successful in this endeavour is another matter.

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meeting of the Pacific Division of the APA (2007), by which time the benighted critics had swelled to include Collins (2007a), Higginbotham (2007), and Pietroski (2008):

> Smith [(2006)] and company do make some rather perfunctory attempts at [refuting the argument] … but they all fail dismally in my view... It is time that my Chomskian critics made a serious attempt to refute it. If the argument is mistaken, it should be fairly easy to say why: it is not an attempt to prove Fermat's Last Theorem!

Whatever the perceived failings of Devitt's critics, I trust the present paper is at least a meeting of Devitt's challenge.

[3] For example:

> Complex innate behavior patterns and innate "tendencies to learn in specific ways" have been carefully studied in lower organisms. Many psychologists have been inclined to believe that such biological structure will not have an important effect on acquisition of complex behaviour in higher organisms, but I have not been able to find serious justification for this attitude. (Chomsky 1959: 577 n. 48)

> [T]here is surely no reason today for taking seriously a position that attributes a complex human achievement entirely to months (or at most years) of experience, rather than to millions of years of evolution or to principles of neural organization that may be even more deeply grounded in physical law... [Language] would naturally be expected to reflect intrinsic human capacity in its internal organization. (Chomsky: 1965: 59)

> The faculty of language can reasonably be regarded as a "language organ" in the sense in which scientists speak of the visual system, or immune system, or circulatory system as organs of the body. (Chomsky 2004: 380)

Devitt (2006a: 9) suggests that a theorist's intention to demarcate a cognitive domain of inquiry offers little reason, by itself, for the conclusion that the technology of the theory (a grammar, let's call it) should be credited with 'psychological reality'. The move is 'fast but dirty', for '[i]t remains an open question whether the rules hypothesised by a grammar are psychologically real'. Devitt's thought here is that merely *intending* a theory, no matter how apparently successful, to be about *X* doesn't make it about *X*; it remains an open question that the theory might be true of some non-*X* domain. So, in particular, linguistic theory tells us about speaker-hearers alright, but it just doesn't follow that the posits of the theory are 'psychologically real'; the theory could tell us about speaker-hearers by way of being true of something else, where what a theory is true of should attract our proper ontological commitment, assuming we uphold the theory in the first place. Well, just what is it to be psychologically real? Devitt entertains a host of construals familiar from the literature of the past forty years; at its simplest, though, 'psychological reality' describes 'structures [that] are employed in speaking and understanding' (Chomsky 1975: 160, quoted by Devitt 2006b: 574). Devitt glosses Chomsky's description of structures being 'employed in speaking and hearing' as 'on-line' processing, the production of linguistic tokens (Devitt 2006a: 36; 2006b: 578; cp. Soames 1984: 154–156; 1985: 160).[4] For Devitt, as we shall see, 'psychological reality' just is the domain of what he calls 'processing rules'. So, Devitt's worry is that the mere intent to be offering a theory of the mind/brain does not suffice to credit the theory's posits with psychological reality; for, without further ado, it has not been established that the grammar subserves on-line linguistic production/consumption. With this lacuna unfilled, a grammar might reasonably be true of some non-psychological realm. Put another way, a speaker might 'behave *as if* her behavior were governed by' the grammar's posits, while in fact it is not (Devitt 2006a: 57). It follows that we are not entitled from the acceptance or, indeed, corroboration of a grammar alone to declare the grammar's posits to be psychologically real.[5]

[4] The 'on-line' conception of psychological reality, although never defended by Chomsky, has been articulated, in some form or other, by many in the field; e.g., Levet (1974), Bresnan (1978), Fodor et al. (1974, 1975), Bever et al. (1976), Bresnan and Kaplan (1982), Fodor (1983), Berwick and Weinberg (1984), Soames (1984), and Pylyshyn (1991). The kind of 'transparency' model entertained by Miller and Chomsky (1963) did *not* take processing to be a criterion of reality for a grammar's posits, but merely suggested that there was a structural concordance between the two, a claim that can be elaborated in different ways without disrespecting the competence/performance distinction (cp. Berwick and Weinberg (1984) and Pritchett (1992)). Although Devitt accepts that 'on-line' processing is the mark of the psychologically real, given his 'linguistic realism', he also holds that a grammar need only be *respected* by the processing rules, i.e., that is all a grammar tells us about psychology. Construed internally, in the way I shall suggest below, 'respect' indeed suffices for a perfectly good sense of psychological reality independently of any theory of processing.

[5] Devitt's point here is inherited from Quine's (1972) suggestion that rule 'following', as opposed to 'conforming', involves consciousness of the rule. The distinction misses the obvious difference between behaviour being *explained* by a posited rule, regardless of consciousness, and behaviour merely conforming to any number of conceivable rules (Chomsky 1975). Devitt also echoes Soames's (1984: 134) thought that 'linguistic theories are *conceptually distinct* and *empirically divergent* from psychological theories of language acquisition and linguistic competence'.

Before we assess Devitt's 'master argument' for the conclusion that generative linguistic theories are, in fact, about something non-psychological, I have three main points to make about the reasoning just presented, one to do with nomenclature, one exegetical, another more substantial, which bears on the general question of what notion of reality is supposed to be informing thoughts of what a theory is *really* about.

2.2.1 Grammars and Psychologism

First, then, nomenclature. The notion of a grammar (particular and universal) is familiarly ambiguous between the linguist's theory and what the theory is about. As we shall see, Chomsky (1986) resolves the ambiguity by coining the term 'I-language' for the type of cognitive state he takes the relevant theories to be about; we may retain the term 'grammar' to designate the theories themselves that take I-languages as their objects. In this sense, a grammar's (/theory's) structural description of a sentence will be a hypothesis, not about a sentence as an external type (or external tokens of a type), but about the capacity of a cognitive system to (amongst other things) represent various external media (sound waves or ink marks, say) in terms of abstract syntactic, phonological, and semantic features, much as theories of vision generate hypotheses about how organisms represent visual scenes. Of course, to adopt this resolution of the ambiguity will make it hard for externalists about the object of inquiry to state their claims coherently, as linguistic externalia on Chomsky's conception will simply be dead sounds or gestures, as it were, not anything *linguistic* at all; the theory is about the cognitive resources that lend the

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According to Soames, the first claim of conceptual distinctness rests upon linguistic theory being animated by 'leading questions' that are independent of psychology and the second claim of empirical divergence rests upon the clear implausibility of taking the rules and principles posited by syntactic theories to be the actual causal springs of linguistic behaviour. As we shall see, the first claim amounts to a stipulation in favour of an externalist notion of language (the 'leading questions of linguistics' are open to both externalist or internalist construal; the choice between them cannot be decided by a priori fiat). The second distinction rests upon a conception of the relevant psychology as restricted to speech production/recognition. It is perfectly sensible to attempt to delineate the abstract structure the mind/brain realises without thinking that one is thereby specifying the actual causal processes involved in linguistic processing, whatever that might mean. Besides, it is not even the case that generative theorists have sought psychological theories in Soames's sense. Soames (1984: 147–151) appears to be confused on the competence/performance distinction. He imagines that the traditional cognitivist approach is to insulate competence (narrowly construed) from any data from processing; competence is merely a theory of the 'grammatical judgements of idealized speaker-hearers' (1984: 148 n. 19). Little wonder that Soames (1984: 154–155) sees the linguist as facing a 'dilemma': on the one hand she seeks a psychological theory, on the other she insulates herself from the relevant data. In explicit contradiction of this reasoning, the first chapter of *Aspects* (Chomsky 1965) seeks to establish the empirical integration of performance and competence, without competence itself being competence to produce or consume anything. Competence is a standing state, abstractly specified, that enables the integration of distinct capacities called upon in linguistic behaviour (for discussion, see Collins 2004, 2007b).

externalia a linguistic life, not the externalia themselves. In order, then, to at least be able to state the conflicting interpretations of generative theory, I shall, *pro tem*, use 'grammar' in the theorist's sense, and leave it open what the object of a grammar actually is – an I-language or something external (I shall return to this issue below).

My second point about nomenclature concerns 'psychologism'. After Frege (1884/1950), 'psychologism' is most often used abusively to denote any account that confuses the logical or the properly semantic with the psychological, which is understood to be a local, contingent mental set-up, a mere subjective matter, which is constitutively unable properly to realise the normative, logical, or modal character of thought. It would be far beyond my present scope adequately to discuss any of the many issues that attach to psychologism so construed. Two quick remarks will have to suffice.

First, as already indicated, by 'psychologism' in the positive sense I shall employ, I do not mean any thesis about logic, normativity, meaning, concept possession, or the like; all I intend is that linguistic theory is concerned with the mind/brain, in a sense to be explained, as opposed to patterns of behaviour or some external media of symbols and signs. By such lights, one may happily accept the anti-psychologism of Frege and others who followed him. Of course, if the anti-psychologism that prevailed throughout much of twentieth century philosophy is extended to a kind of transcendental claim, whereby the philosopher a priori judges what is and isn't possible in empirical inquiry, then the thesis should be flatly rejected.

Secondly, to say that linguistic theory is psychologistic is not to suggest a reductionist attitude towards the relevant linguistic kinds. This will be a crucial feature of the following. It is perfectly coherent to view linguistic kinds as specified in a theory as essentially abstract, *sui generis* (Chomsky 1987). The theory will still be psychological if it only explains psychological phenomena.

2.2.2 Chomsky on Psychological Reality

My initial exegetical point pertains to Devitt's reading of Chomsky. *Pace* Devitt (2006a: 64), Chomsky has *not* 'persistently suggested' a processing conception of 'psychological reality'; on the contrary, Chomsky's (1955–56/75: 36) use of the notion comes from Sapir, and Chomsky has been persistently leery of its standing, if understood as being more substantial than the bare idea that linguistic theory targets psychological phenomena for its explananda. So, if a grammar is a cognitive theory, then, of course, the posited structures are understood to be 'employed' in cognitive activities. It does not follow, though, that such cognitive theories are ones of processing (production/consumption of tokens), or, in Soames's (1984) terms, that there is an 'isomorphism' between the grammar and processing rules; indeed, such a consequence would contradict Chomsky's position in *Aspects*, which explicitly separates competence as the object of theory from on-line processing (1965: 8–9). A competence theory is to be thought of as the abstract specification of a function (lexical items to complex structures) that imposes a set of conditions upon

processing, but is not a theory of the processing itself or reducible to it. By 1980, Chomsky (1980a: 106-109) diagnoses the appeals to the 'mysterious property' of psychological reality as an undue insistence that certain special kinds of evidence (e.g., from parsing or neurology) are required to establish that the posits of an otherwise accepted (evidentially supported) theory are real.[6] Of course, we should like as much convergent evidence as possible, but if doubts over the psychological reality of certain theoretical posits boil down to just a concern that a certain kind of evidence is missing, then there is no issue about reality at all; the theory simply remains unsupported rather than true of some other reality.[7] I think Chomsky's deflation of the issue is in essence correct, but it misses a crucial step by not offering a positive construal of what psychological reality a competence theory might have, given the kind of theory it is, i.e., given that it is not a processing theory. That is, the sceptic of the psychological reality of linguistic posits is liable to think, 'Bother different kinds of evidence! If a competence theory does not make claims about processes, then it is not a psychological theory, and so, if true, it must be true of something other than psychology'. Chomsky resists this urge to treat competence as really a form of processing, if a competence theory is to be psychologically real, but he leaves those with the urge unsatisfied. The way to bring resolution here is to offer a theory-relevant notion of 'reality' in general, from which it follows that linguistic theory is psychological notwithstanding the fact that it is not a processing theory. This takes us to the substantial issue of what we should mean by 'reality' when assessing a theory.

2.2.3 Minimal Realism

The following conceptual claim seems to me unremarkable when we are not dealing with linguistics:

Conceptual Thesis: If a theory *T primitively explains D*-phenomena, then at least some of *T*'s posits are *minimally real* over *D*, i.e., a theory is about what it explains.

[6] Of course, not every term of an evidentially supported theory is understood to correspond to a real element of the domain; many elements will be wholly theory internal and at a given stage of inquiry it might not be clear what is real and what is not. This kind of complication, however, holds for any empirical inquiry, and poses no special problem for linguistics in particular. See Harman (1980) and Chomsky (1980b) for discussion.

[7] Although my focus in this paper is on intuitive evidence, for that is the locus of much of the philosophical disputes, it bears emphasis that it is Chomsky's long-standing position that 'discoveries in neurophysiology or in the study of behaviour and learning... might lead us to revise or abandon a given theory of language or particular grammar, with its hypotheses about the components of the system and their interaction' (Chomsky 1975: 37). In general, 'We should always be on the lookout for new kinds of evidence, and cannot know in advance what they will be' (Chomsky 1980a: 109). For overviews of the relevant evidence far beyond intuitive data, see, e.g., Jenkins (2000, 2004) and Anderson and Lightfoot (2002).

Let the following definitions hold:

Primitive explanation: *T primitively explains D* iff *T* explains *D*-phenomena independently of other theories, and *T* does not explain anything non-*D* without being embedded in a larger theory. *T* is explanatorily invariant over *D*.

Minimal reality: A theory's posits are *minimally real* over *D* iff they are interpretable (not mere notational) elements of evidentially supported theories that explain *D*-phenomena.

The thesis is unremarkable for it claims nothing more than that at least some of the posits of successful theories are counted as 'real' over some domain when the theories actually explain the relevant phenomena and that is all they explain on their own. Let's consider two familiar examples from physics. We may say that Newtonian mechanics (or the classical form via Lagrange) primitively explains phenomena for which the classical concepts of mass and force apply in the above sense. So, mass and force are presupposed in every explanation, and the theory doesn't explain anything beyond the application of these concepts without additional resources. Thus, Newton was led to his theory by consideration of the orbit of Earth's moon, but the theory does not primitively explain the orbit, i.e., the theory says nothing about the particular mass of the moon or its distance from Earth or whatever masses might be affecting it; the theory is invariant over such contingencies. Otherwise put, even if there were no Earth or moon, or their masses and relative distance were different from what they are, the theory would not be refuted. All the theory primitively explains is the interaction of mass with force, not why we find the particular masses we do and their relative distances from one another. In such a sense, the theory is only minimally committed to certain kinds of interactions, given mass and force. For another example, consider the development of the theory of electromagnetism in the mid to late nineteenth century. The theory takes *fields* to be 'physically real', for the field equations primitively explain electromagnetic phenomena. On the other hand, it is not at all standard to take *potentials* or *lines of force* to be physically real, for they explain nothing that the fields do not explain. That is, while we can appeal to electric potential, say, describing the voltage carried by a wire, we know that it is not the potential itself that explains the current, for it is not invariant relative to the field. It is somewhat analogous to measuring the height of a mountain relative to sea-level as opposed to the lowest point of the Earth, or some other arbitrary point.[8]

It bears emphasis that I do not intend the notion of 'minimal reality' to decide on any issues in the philosophy of science as to the ultimate reality of fields or anything else; on the contrary, the expression describes those putative entities and relations towards which is directed one's *general* philosophical position, be it empiricist, realist (with a capital 'R', if you like), structuralist, or something else. To be 'real' in this sense means that the posit is not arbitrary, conventional, or merely notational, but is an invariant feature of the theory's explanations and so is counted as real, insofar as the theory is deemed true or successful. The present point, then, is simply

[8] See Lange (2002: ch. 2) for a good discussion of these issues.

that one can be minimally realist about fields, but not potentials or lines of force, say, independently of any wider commitments about what such reality amounts to in some more metaphysically robust sense. My claim is that linguistics enjoys the same status as physics in this regard; linguistics need clear no extra hurdle in order for us to count its posits as real for the purpose of understanding the nature of the explanations and ontology of the science of the domain at hand. So, here is the substantive thesis (which mirrors one for field theories and electromagnetic phenomena):

Substantive Thesis: Generative theories primitively explain psychological phenomena.
Consequence: The posits of generative theories are psychologically real in a sense that concerns the interpretation of scientific theories.

Devitt is perfectly right, then, that it 'remains an open question' what structures govern behaviour, have their hands on the causal steering wheel. But generative theories, qua competence theories, are not directly concerned with the governance of behaviour. This does not affect their psychological status, however, for they independently (/primitively) explain nothing non-psychological and do explain phenomena that are uncontroversially psychological. That, at least, will be the claim I shall seek to substantiate.

2.2.4 General Remarks

Before we consider Devitt's 'master argument', some general morals can be recovered from the preceding discussion. Lying behind the doubts about the psychological reality of a grammar's posits must be some selection of the following thoughts: (i) linguistic theory does not primitively explain psychological phenomena; (ii) to be genuinely psychological, linguistic theory must be rendered as a theory of processes or neuronal organisation; or (iii) the reality of psychological posits demands the satisfaction of a priori conditions or a ranking of the significance of different kinds of evidence, where both the conditions and ranking are peculiar to psychology. I think we can dismiss the third thought, for I take no relevant party to be happy with such a methodological dualism (this is the essence of Chomsky's deflationary attitude to the issue). We are left, then, with the first two thoughts. The second thought is really contingent on the first thought; for if a grammar in fact explains only psychological phenomena, then it is just a semantic stipulation to claim that the grammar remains non-psychological merely because it is not a processing theory. At any rate, if a grammar's explanatory domain were psychological, then even if one thought that a psychological theory must be one of processing, the idea that linguistics targets externalia wouldn't be advanced any. One would simply be left with a problem of how to classify linguistics and how its claims relate to a likely processing theory. The crucial thought, therefore, is the first one. It is only this thought that leads one to be genuinely sceptical of the psychological status of linguistic theory, because if the thought is true, then a grammar will not primitively

explain psychological phenomena, which is just to say that a grammar is really about something other than psychology, even if it can be used, in concert with other theories, to explain such phenomena (the explanation will be indirect, non-primitive). As mentioned above, tackling these issues via Devitt is especially apt, for Devitt's argument is the most elaborated version of linguistic anti-psychologism in the literature and can be read as a distillation of the thought that there is something other than psychological phenomena that a grammar targets.

2.3 Devitt's 'Master Argument'

Devitt (2006a: ch. 2) does not present an argument as such, rather (i) he offers three general distinctions that are intended to pertain to representational systems in general; (ii) he purports to show that the distinctions apply to language as conceived by generative linguistics in particular; and (iii) he concludes that the distinctions as so applied support a 'linguistic reality' construal of generative linguistics rather than a psychological one. Here is my reconstruction of Devitt's line of reasoning.[9]

(DA)

(1) a. There is a distinction between 'the theory of competence [and] its outputs/products or inputs' (2006a: 17).
b. There is a distinction between 'the structure rules governing the outputs of a competence [and] the processing rules governing the exercise of the competence' (18).
c. There is a distinction between 'the respecting of structure rules by processing rules [and] the inclusion of structure rules among processing rules' (22).

(2) These general distinctions apply to language as conceived by generative theories.

(3) Therefore:
a. The theory of linguistic competence and its processing rules is distinct from the theory of the structure rules of the linguistic expressions that are the product of that competence.
b. The theory of structure posits rules that the competence respects, but the rules need not be involved in processing.

(4) A grammar is best interpreted as a theory of the structure rules of linguistic expressions, not of linguistic competence.

(5) Therefore, a grammar is about linguistic reality (structure), not psychological reality.

Devitt (2006b: 576–577) encapsulates this argument as a challenge:

> If the psychological conception of linguistics is to be saved, there must be something wrong either with the distinctions [(1a-c)] or their application to linguistics [(2)]. It's as simple as

[9] Devitt offered me something very similar to this argument in personal correspondence.

> that. And if the problem is thought to lie not with the distinctions but with their application we need to be shown how human language is relevantly different from the bee's dance.

In line with Devitt's challenge, for the purposes of my riposte, I shall only tackle the crucial premises (2) and (4); that is, I shall grant that Devitt's three distinctions listed under (1) are in good standing for at least some non-linguistic systems (maybe the birds and the bees and the blacksmiths), but not for language in the form Devitt presents the distinctions. With the distinctions correctly construed, the conclusion does not follow, i.e., (5) is false. Thus, in terms of Devitt's challenge, I shall primarily be questioning the application of the distinctions to language as conceived by generative theories, and leave unmolested the idea that the distinctions might apply elsewhere beyond language.

It bears emphasis that the conclusions I seek to establish by way of challenging Devitt's argument do not reflect any general metaphysical orientation; I reject linguistic externalia, not because they are metaphysically outrageous, or because I am inclined towards some species of idealism, but simply because they are explanatorily otiose: they neither constitute phenomena to be explained nor explain any phenomena.

2.4 Questioning Premise (2): Applying the Distinctions

Devitt (2006a: ch. 2) presents his distinctions via a motley set of cases, from von Frisch's dancing bees, via logic machines that spit out theorems, to blacksmiths and their horseshoes. The general idea is this: *how* a system (a bee or a blacksmith) manages to produce its outputs is one thing; the structure or properties of those outputs is another thing. Still, the processing mechanism that determines *how* the products are produced *respects* the structure of the outputs insofar as they are its outputs. For example, von Frisch gave us a splendid theory of the information communicated by a honeybee's dance. This is a theory of the structure rules alone, for von Frisch didn't tell us how the bees produce the dance; mind, however the bees do their thing, the enabling processes respect the structure of the dance, for that is what the bees' mechanism is for, to produce a structure that may carry the appropriate information about the presence of nectar relative to the position of the hive. Likewise, a logic machine might follow all kinds of procedures in its production of well-formed formulae, but we have programmed it so that it respects the structure rules we have invented (e.g., our definition of a well-formed formula of first-order logic and what counts as validity). Devitt suggests that the same holds for language (cp. Soames 1984). We have a competence that produces external objects (sound waves, hand gestures, inscriptions, etc.) that constitute a linguistic reality. Our linguistic theories are about the structure of these objects under conventions of use that fix what is to count as nouns, verbs, etc., and their phrasal projections with all the attendant syntactic complexity. Linguistic theory is not about the internal processes or states of speakers that produce the strings that have complex high-level grammatical

properties; it is about such strings themselves. Still, the processes or mechanisms that do produce and consume the strings *respect* the linguistic properties of the strings, properties that linguistic theory is about.

Even if we grant these distinctions for the bees, the machines, and blacksmiths, without further ado, it does not follow that the distinctions apply to language; after all, we have here nothing but analogies. Furthermore, the distinctions appear not to apply to the mammalian visual system or the immune system, say, neither of which produce external products such as horseshoes. Perhaps language is more like vision in this sense. Besides, even if one were inclined to think that the distinctions do apply to language, it would be nice to see precisely how they do. Devitt (2006a: 29–30), for sure, is aware of the lacunae. He offers a single substantive reason to think that the analogies are a compelling basis to think that his process/structure distinctions apply to human language. He writes:

> How could we make any significant progress studying the nature of competence in a language unless we already knew a good deal about that language? Just as explaining the bee's dances is a prerequisite for discovering how the bee manages to produce those dances, so also explaining the syntax of sentences is a prerequisite for explaining how speakers manage to produce those sentences. (Devitt 2006a: 29)

Devitt's thought here is that if linguistics on its psychologistic construal is worthwhile, then so must be linguistics on his construal, for both construals require a clear conception of the structure rules that are evident in (or at least recoverable from) the products of competence prior to inquiry into the psychological processes that produce such products. If this is so, then Devitt's three distinctions appear to apply, which, in essence, simply distinguish structure from psychology, with the latter respecting the former.[10]

If one were already convinced of the existence of a linguistic reality such that a grammar is a theory of it, then Devitt's analogical reasoning might bolster one's conviction.[11] But we precisely want a reason to think that there is such a reality that is relevant to linguistics and we are not given one here: Devitt's argument reads his 'linguistic reality' into the metatheory of generative theories, as if the linguists' appeal to structure must be about external structure, given that only processing rules are internal. I don't imagine, of course, that Devitt is unaware that his distinctions presuppose what is in contention. His reasoning appears to be that since the distinctions are general, they enjoy default application to language as generatively

[10] This line of reasoning is equivalent to that of Katz (1981: 70–73, 81–83) and Katz and Postal (1991: 524–525), who argue that a conception of a language must be prior to a conception of the putative underlying psychological states, for any evidence on such states must be *indirect* relative to *direct* evidence from the language itself. Soames (1984: 140) makes the same point, suggesting that psychological evidence is 'indirect' given a fixed 'pretheoretical' conception of language. In a related vein, Wiggins (1997: 509–510) claims that any psychological inquiry into 'speakers' 'presupposes the results' of a non-psychological inquiry into language.

[11] Of course, there is a reality of ink marks, hand gestures, pixels, etc. The only issue is whether such a heterogeneous domain supports properties of the kind that concern linguistics, where these properties might *depend* upon the human mind/brain but not be part of it.

conceived. Devitt's burden is to show that they do in fact apply to language; the burden of his opponent is to show that they don't. The above quotation provides a challenge to Devitt's opponents, for sure, but, I shall suggest, the distinction between processing and structure is a distinction internal to cognition, not between cognition and some other putative linguistic reality. Before I spell out this thought (§2.4.2), it is worthwhile to question the analogical nature of Devitt's reasoning here.

2.4.1 Chomsky and Devitt's Three Distinctions

As we saw above, Devitt's distinctions do apply to numerous systems, but they also fail to apply to numerous other systems, such as the 'organs' that Chomsky favours for his own analogical purposes. Moreover, Chomsky is pretty explicit in rejecting all of the distinctions, as Devitt construes them, precisely because they do presuppose an external 'linguistic reality'. In short, Devitt's distinctions might have *some* generality, but they are hardly a neutral, default conception of a cognitive system or other organic systems. Let us briefly see this.

The first distinction is between a competence system and what it produces. Famously, Chomsky (1965: 3–4) does make a competence/performance distinction, but it is not Devitt's distinction. For Chomsky, the distinction is between internal systems, some of which govern speech production and comprehension, and others that independently constrain such processes, but might be systematically misaligned with them for independent reasons (more on this below): 'To study actual linguistic performance, we must consider the interaction of a variety of factors, of which the underlying competence of the speaker-hearer is only one' (1965: 4). In this light, what Devitt calls 'competence', Chomsky would call 'performance', for Chomsky's notion of competence by itself does not relate to the production of anything at all, let alone external tokens of strings. 'Competence' designates what a speaker-hearer knows in the abstract sense of conditions that apply to performance, but which hold independently of any production or consumption activity. Insofar, then, as Devitt's 'structure rules' demarcate competence, they do not describe external types that internal processes respect, but rather abstractly specify internal factors that enter into an explanation of the character of the performance in concert with other language-independent factors. Indeed, Chomsky has long been keen to point out that most uses of language are internal, integrated into thought, entirely lacking any external garb (Chomsky 1975, 2012; Hauser et al. 2005). For sure, the ensemble of systems does produce acoustic waves, hand gestures, inscriptions, etc., which we consume *as* language, but the rules/principles of the grammar do not have application to them in the first instance, as if it were the properties of the modalities of language use that linguistics targets. A grammar is supposed to explain the character of our capacity to produce and consume material *as* linguistic, not merely to describe the result of the capacity (the input and output) in linguistic terms. We shall return to this point shortly; *pro tem*, my present moral is twofold. First, Devitt's distinction between competence and its product presupposes an external linguistic reality,

which is currently in dispute. Secondly, Chomsky *does* distinguish competence from any potential products, but not in such a way as to presuppose a 'linguistic reality', for the products are massive interaction effects that only have a structure understood relative to a cognitive system that may produce or consume them *as* linguistic; they don't possess a structure that internal states *respect*.

Devitt's second distinction is between 'processing rules' and 'structure rules'. Again, Chomsky does make some such distinction, for his claim is not that the rules/principles of a grammar are an account of the mechanism that produces particular performance events. A grammar is construed as an abstract specification of the function (in intension) the human mind/brain realises, without any accompanying assumption as to how the function is realised.[12] Adopting Devitt's terms, we may say that a grammar is of *structure* that the mind/brain *respects* in its *processing* (consumption and production) of acoustic waves, hand gestures, etc., but such external material does not possess the hypothesised structure. We shall get to Devitt's notion of *respect* shortly, but even on the sketch given, it should be obvious how processing and structure are not two distinct realms that require an external (as opposed to an internal) relation between them. They both relate to internal systems that set both gross and fine-grained constraints on linguistic behaviour. For instance, we can decide what sentence to use on an occasion, but we can't *decide* to speak or understand Spanish or Navaho, if we were just to try hard, or were really smart. Also, once a competence (structure rules in Devitt's sense) is acquired, it sets fine-grained constraints on what we can process. Consider, for example, the following case:

(1) a. *What did Mary meet the man that bought?
b. (What x)(Mary met the man that bought x)

Here we see that (1a) has a potential interpretation that is perfectly coherent, but we just cannot interpret the string in that way. We shall consider other cases of this kind of phenomenon later. The present moral is that a grammar seeks to explain the constraints our competence places on the interpretations we can associate with 'vehicles' (sounds, etc.), where these constraints are not exhausted by or explicable in terms of the non-linguistic systems with which competence interacts. It is in such a sense that competence may be viewed as a body of 'knowledge' that is 'used' by independent systems, rather than being an abstraction or idealisation from those systems. Just how we are to understand this relation of constraint between competence and performance remains highly problematic, but the bare distinction is not one that Devitt is questioning.

[12] For example:

> We do not know for certain, but we believe that there are physical structures of the brain which are the basis for the computations and representations that we describe in an abstract way. This relationship between unknown physical mechanisms and abstract properties is very common in the history of science... In each case the abstract theories pose a further question for the physical scientist. The question is, find the physical mechanisms with those properties. (Chomsky 1988: 185)

What might be leading Devitt astray is a conflation of formal rules of generation with putative processing principles. In a formal sense, the rules that *strongly* generate structures will be equivalent to structure rules in the sense Devitt appears to be using the notion. This follows from the mathematical equivalence of membership conditions on a recursively enumerable set and a set of rewrite rules with a closure condition. Strings understood *weakly* (i.e., independent of a particular system of generative rules) have no inherent structure at all. Let us consider a toy example, which suffices to make the general point. Let the string 'aabb' have the structure '$[_Z$ a$[_Z$ ab] b]' because it was generated by the rules:

(i) $Z \rightarrow ab$
(ii) $Z \rightarrow aZb$

The same string can also have a distinct structure '$[_Z$ $[_Z$ $[_Z$ aa] b] b]' because it was generated by a different pair of rules:

(iii) $Z \rightarrow aa$
(iv) $Z \rightarrow Zb$

So, a string understood as strongly generated is a formal object, as it were, with an intrinsic structure that reflects the rules that generate that object as a member of a class of structures that the rules define. From this perspective, strings themselves have no structure at all and do not acquire any structure as if they could carry the structure with them independently of the rules that define the string as a member of the consequence class of the rules. Still, if we were to think of bare strings as externalia and the rewrite rules as processing rules, then one could be misled into thinking that the rules exemplified produced strings that do carry the structure indicated. Yet that just is to be confused about the character of the rules. The rules are all structure rules (in Devitt's sense). They generate a set of structures that are usable to characterise strings as meeting certain conditions and so as belonging to linguistic types, but they do not produce any strings at all, and no string acquires, still less retains, a structure from the rules. Viewed in terms of strong generative capacity, the set of strings a grammar weakly generates is a pointless abstraction, a striping away of all but linear information to leave a concatenation of symbols. The reverse does not hold. Viewed weakly, a grammar generates no structure at all, and so no structure can be abstracted from it.

Devitt's third distinction is between processes *respecting* structure, and structure being included in the processing. Again, Chomsky cleaves to such a distinction, but not in Devitt's sense. The processes of the brain respect the grammar insofar as the grammar proves to be explanatory of cognitive phenomena; just how the grammar relates to brain states understood at a different level of abstraction (e.g., neuronal organisation) is an open question about which we know very little. Respect, in this sense, just means 'realise'. For Devitt, respect appears to be an external relation between structured outputs (external entities) and processing states. According to Devitt, the outputs clearly acquire their structure from the processing, wholly or in part, but somehow retain the structure like horseshoes on the floor of the smithy. To be frank, just what Devitt's notion of 'respect' amounts to remains obscure, but the

key thought seems to be that a grammar tells one nothing psychological beyond the fact that the mind/brain produces objects with the structure the grammar specifies. This claim, though, precisely tells us that the grammar *is* about the mind/brain, and it would be wholly about the mind/brain, if it turned out that the putative externalia that we talk about as having a structure were not to enter into the explanations the grammar provides. Thus, Devitt's notion of respect only militates for externalism given the presupposition that there is an external linguistic reality that is respected. Read minimally, the respect condition merely says that a grammar specifies a class of structures or a function that generates the set to which mind/brain processes conform, which does not entail anything linguistically external at all. So, respect (to adopt Devitt's jargon) may be read as an internal relation in the sense that we take the human brain to respect (realise) the constraints abstractly specified in the grammar, but there is nothing outside of the human brain that has a structure that demands respect. The rewrite rules exemplified above, say, do not describe strings, but describe conditions a cognitive system or a computer respects such that it can produce and consume the otherwise unstructured strings as possessing a specific compositional form.

I have so far argued that even if Devitt's distinctions do apply to a heterogeneity of systems (from bees to logic machines on to blacksmiths), they do not apply to language as Chomsky conceives of it. The reason they do not is that the distinctions presuppose an externalism of structured outputs. So, for Devitt's distinctions to perform the job asked of them, Devitt must show that the kind of general internalist construal of the distinctions as just outlined does not suffice to support a 'psychologistic conception' at the expense of an externalist conception.

2.4.2 Products Before Competence?

Let us turn now to Devitt's (2006a: 29) substantive claim that 'explaining the syntax of sentences is a prerequisite for explaining how speakers manage to produce those sentences'. Well, as suggested above, it is certainly true that one requires some conception of syntactic structure (the function computed) if one is to understand linguistic performance (processing), which is supposed to be *the* key moral of Chomsky's (1965) competence/performance distinction (see Collins 2007b). It does not follow, though, that syntax has a plausible externalist construal, as if syntax amounted to properties of ink marks or sound waves or something more abstract. Devitt appears to take such an externalist construal to be obvious (cp. Cummins and Harnish 1980; Katz 1981; Soames 1984; and Katz and Postal 1991). I shall return to pleas to common sense below. What I want to demonstrate now is that the very phenomena syntactic theory targets are psychological, not linguistic in some extramental sense. So, even though 'explaining the syntax of sentences is a prerequisite for explaining how speakers manage to produce those sentences', explaining syntax remains in the orbit of psychology.

Linguistic textbooks are full of example sentences that are described as ambiguous, marginal, unacceptable, etc. *Prima facie*, it would appear as if linguists are talking about the properties of the inscriptions, or at least some non-mental idealisation thereof. It thus seems as if a cognitive theory proper is one that explains how speaker-hearers can act in ways that respect the properties the linguist has specified, such as finding a string ambiguous in just the ways the linguist describes. If, however, one considers the theories and their intended *explananda* rather than the mode of presentation of the phenomena, it becomes clear that the properties of the inscriptions, understood as an independent domain, are not at issue. A linguistic theory *primitively explains* the speaker-hearer's understanding, not properties of the inscriptions themselves.

Our conception of the inscriptions, understood *independently* of the technology of a grammar (a linguistic theory), remain invariant under theoretical analysis. In crude terms, the grammar tells us nothing about the strings, but lots of things about how we interpret them. Unsurprisingly, linguistic theory is not the means to find out about ink marks, acoustics, pixel arrays, etc.; our conception of such entities remains constant under divergent grammatical analyses. For example, let us agree that we say 'a sentence is ambiguous' when competent speaker-hearers are robustly able to construe it as having two or more interpretations. Imagine, then, that we have settled on an analysis under which a given sentence is two ways ambiguous as opposed to three or four ways ambiguous. The analysis appears not to have explained anything about the string itself, why, say, it should be ambiguous independently of the interpreting capacities of particular speaker-hearers. Might our analysis explain something about the cognitive states of speaker-hearers? Clearly, if we construe the analysis to be a hypothesis about the mental structure speaker-hearers 'employ' to interpret the string, which is the phenomenon we are seeking to explain. Of course, the analysis might be wrong, but that is a different matter. On the other hand, attributing the structure to the external string explains nothing, for we still don't know why speaker-hearers robustly respond to the string the way they do, which is the very explananda.

Consider the old chestnuts:

(2) a Visiting relatives can be boring
b. Barking dogs can be boring

(2a) is familiarly two ways ambiguous; (2b) is not ambiguous. The data here, however, are not the strings themselves, but the fact that speaker-hearers reliably can find just two interpretations for (2a), but just the one for (2b). A standard way of explaining this difference is to say that *visiting* in (2a) allows for a phonologically null subject PRO (to give one the reading where someone or other, most times the speaker, is visiting the relatives), but *barking* does not allow for such a covert subject, so only has the reading corresponding to *Dogs that bark can be boring*. This may seem arbitrary or merely descriptive, but it is not. *Visit* is transitive and *bark* is intransitive. Thus, with the participle forms, *visiting* allows for an elided subject, *barking* does not, for the subject of the root verb *bark* is provided, i.e., *dogs*. The reasoning generalises across present participles in English as the reader may check

for herself. See Chomsky (1955–56/75: 467–470) for an early transformational account of this kind of ambiguity.

Imputing such complex properties to the strings, however precisely that is to be understood, does no explaining for us unless we also impute some 'grasp' of it to the speaker-hearers. After all, if they were differentially responding to the strings for some other reason than the one explained, our explanation would be fallacious. Yet once we properly credit the speaker-hearers with the requisite syntactic competence, it becomes opaque what reason there could be to further claim that the mental complexity the speaker-hearers must possess is recapitulated externally such that speaker-hearers can recover or recognise the relevant properties in the strings themselves. What was to be explained – the ambiguity phenomena – are explained without rerouting the syntactic properties through the otherwise syntactically unstructured strings, which leaves the phenomena unexplained without again crediting the speaker-hearers with the very structure at issue.

A grammar should also explain why there are perfectly coherent interpretations that are unavailable to us. Consider the following cases:

(3) a. He wants Fred to leave
b. His brother wants Fred to leave

Note that we can't construe (3a) as meaning that Fred wants to leave, but we can construe (3b) as meaning that Fred's brother wants Fred to leave, i.e., the available construal of the pronouns *he* and *his* differs between the cases. Following Devitt's line, here we would be after explaining a difference between the strings that precludes a certain interpretation. Again, we are confronted with a cognitive phenomenon, for whatever properties we attribute to the strings does not entail that speaker-hearers should interpret them one way as opposed to a multitude of other ways. If the relevant analyses are attributed to speaker-hearers, then the differences between the cases in (3) are explained.[13]

The same reasoning exhibited in these two cases holds across the board. The phenomena linguistic theories seek to explain are cognitive phenomena, not phenomena essentially involving external entities. This is obvious when one reflects that the preponderate data are un/acceptability judgements. An explanation of why a string is acceptable or not must involve the informant to whom it is un/acceptable. We are not interested in explaining anything about a string itself beyond informants having the reactions to it they do, which does not depend upon any independently identifiable properties of the string itself. Or consider the productivity of language. It is often said that English (German, etc.) contains infinitely many sentences. That sounds like a claim about abstract entities, not cognitive states. But what are the empirical phenomena? The phenomena are that speaker/hearers display continuous

[13] According to standard accounts, the relevant difference is that, in (3a), *he* c-commands *Fred*, which rules out a joint construal. In (3b), *his* does not c-command *Fred*, and so a joint construal is permitted. C-command is a central relation of grammatical analysis: an item c-commands all and only its sisters and their daughters, where sisters and daughters are arboreal items related to a given item as if in a family tree.

novelty and have no observed bound of competence. Now, these two facts do not *necessitate* a grammar that generates infinitely many structures, but the only way to preclude an infinity of structures would be to set some arbitrary sufficiently high bound on structural embedding or co-ordination. That would be an idle stipulation. Thus, we credit the speaker-hearers with a cognitive system of unbounded capacity that explains their continuous novelty. The idea that English, say, is an infinite *set* of objects is an abstraction, which plays no explanatory role in linguistics as far as I can see.

Here is a concessive way of putting my general point against the claim that linguistic theory targets or presupposes linguistic externalia. Let us grant that, in some sense, external marks have linguistic properties and that we normally speak as if they do, at least when talking about texts, if not the ephemera of sounds. The question, now, is 'How come we can invest all these sounds and marks with a linguistic life?' That is a question about a cognitive phenomenon and requires a cognitive explanation, for rabbits and fish don't do it, and it is wholly unobvious how we do it. But once the investment is up and running, as it were, and we unthinkingly do produce and consume various materials *as* linguistic, for all purposes other than theoretical explanation, it is obtuse, pointless, and inconvenient not to be uncritical and say, 'That sentence has this and that structure'. Yet this is just a convenience.[14] When a linguistics text tells us that a sentence is ambiguous, say, the claim is not that the exemplified string has some peculiar hidden structure or some high-level functional property or any other property as an external entity. The claim is simply that competent speaker-hearers robustly and reliably associate 2+ specific interpretations with tokens of such a string type, which is a phenomenon to be explained, rather than a given fact that enters into the desired explanation. Thus, an analysis that explains the ambiguity is not imputing properties to the string, but making explicit the divergent structures (2+ of them) speaker-hearers may cognitively employ to interpret the string. The string itself, qua an external entity, remains exactly as it was. Devitt's error is to read our cognitive accomplishment (the

[14] It is tempting to adopt a 'projectionist' position here, as if the mind projects linguistic structure onto a string such as to render it structured, much as a given opaque surface might be said to be coloured. I think this temptation should be resisted. In an obvious sense, there is a projection, for we do hear and read various materials as being structured and meaningful, even though they are just lifeless marks in our absence. Such a projection, however, is far too shallow to support an attribution of full syntactic structure to the external material. We can, indeed, distinguish word boundaries and (some) phrases to such a degree as to make their attribution to the string seem obvious, but obviousness quickly reduces to zero for the kind of structure and properties that linguistic theory posits, much of which has no morphological signature at all. Still, we can think of the mental structure linguistics posits as constraining our phenomenology, so that we have available to us a shadow or blueprint, as it were, of the actual constraints.

I think these remarks critically bear on the position of Rey (2006a, b), who views linguistic structure as a kind of illusion our minds reliably generate. We might well have an illusion of words out there, but not the illusion of PRO, or of phonologically null copies, or relations of domination, etc. Again, such features seem to generate or at least constrain the character of our 'illusion', but they are not part of it (see Collins 2009, 2014).

production/consumption of strings *as* linguistic) back into the explanation of the accomplishment.

The accusation might be made that I am dealing with too wooden (too nominalist) a conception of 'linguistic reality' as ink marks or sound waves. After all, Devitt (2006a: 155) takes syntactic structure to be 'high-level functional' properties of strings fixed by the conventions of use of speaker-hearers. Being a noun, say, is supposed to be a property a word has thanks to playing a certain role in relation to other words as fixed by the regularities that hold in given languages. So, whether linguistic properties as so understood obtain or not, indeed, largely depends upon our cognitive states, but the properties are not themselves mental. Such a position has its deep problems.[15] Fortunately, for present purposes, the only relevant issue is whether linguistic *explanation* requires there to be external syntactic properties, no matter how functional or high-level they might be. We have so far seen no reason to think so. My considerations are not directed towards nominalism, but any species of realism towards linguistic externalia.[16]

Devitt could appeal to Katz's (1981: 195–196) distinction between the *source* and the *import* of data; that is, (psychological) intuitions might be the source of our data, but the import of the data concerns the external types. The distinction is in good standing generally, but, again, we are after a reason to apply some such distinction to the present case of language and so far it appears that *source* matches *import* in the case of language.[17] Data on ambiguity, say, has clear import for how a

[15] A functional specification of some traditional grammatical notions is not uncommon, and can be extended (Chomsky 1965: 68–74). Such a procedure, however, involves relations between linguistic categories or structural positions, and so cannot be a general characterisation of linguistic structure of the sort Devitt supposes is available. In essence, Devitt's problem is to identify some non-linguistic properties that might be conventionally recruited to carry syntactic properties by way of their role in communication or the general expression of thought. This task is difficult enough for simple cases of being a noun (I've never heard of any attempt to carry out such a programme), but looks impossible for empty categories that are *defined* in terms of syntactic position. For debate on this point in relation to PRO, see Devitt (2006b, 2008a, b) and Collins (2008a, b).

Devitt (2006a: 39–40) readily acknowledges that linguistic reality largely supervenes/depends on the mind/brain. Such dependence, though, does not mean that linguistic reality *is* cognitive: dependence does not make for constitution; were it to, the only inquiry would be physics. The issue of supervenience, however, is irrelevant. The reason linguistics is about the mind/brain is *not* that language supervenes on the mind/brain, but that only cognitive phenomena are explained by the linguistic theories, and external factors are neither entailed nor presupposed by such explanations.

[16] Devitt (2006a: 98–100) does rightly claim that evidence for a grammar is not restricted to intuitions. As previously noted, though, it doesn't follow that any such extra-intuitive evidence is non-psychological. The only pertinent case Devitt mentions is corpus studies (2006a: 98–99). A corpus, however, is simply an example or database of constructions used. It only serves as evidence for a grammar on the basis of the theorist taking the various constructions to reflect the understanding or competence of the users of the language. After all, a linguistic theory is not a theory of what utterances people have made. A corpus, of course, can provide invaluable evidence for acquisition models, but here the corpus is treated as a record of the cognitive development of the child, not as direct data on the language itself.

[17] Katz made his distinction in defence of a Platonist position, where it is much easier to construe the import of the intuitive data as being about abstracta on analogy with the case of mathematical

speaker-hearer will respond to and interpret a string, but it looks to have no import for the string itself, our conception of which can remain as it was without affecting our analyses or explanations.

Furthermore, this conclusion does not entail that we cannot couch linguistic explanation in externalist terms, as if, indeed, the import were concerned with the external types; my claim is only that such explanation is not required and, if offered, is parasitic on an internalist or psychologistic explanation. Let us see this by considering yet another example.

Consider:

(4) Fred's brother loves himself

Here, the reflexive *himself* is jointly construed with *Fred's brother*; a construal that relates the reflexive to *Fred* or *brother* is clearly excluded. Yet why shouldn't the structure be ambiguous, or mean something different? The standard explanation is that reflexives require a c-commanding antecedent, and neither *Fred* nor *brother* in (4) c-commands *himself*. Here is an externalist explanation of this phenomenon in line with Devitt's position:

(EE)

(i) S is competent in English and hence *respects* its structure rules.
(ii) *Fred's brother loves himself* is an English sentence in which *himself* is c-commanded by the whole DP but not by either of its constituents.
(iii) It is a rule of English that, in these circumstances, the reflexive must be bound by the whole DP.
(iv) Therefore, S, because he respects the rules of English, gives a joint construal to *himself* and the whole DP.

So, here we have a cognitive phenomenon of S's unique understanding of (4) and an explanation of it that appeals to the external structure rules of English. Now, we should not say that this explanation is wrong; rather, (i) it is not required and (ii) the explanation only works on the back of an internalist one.

On the first point, we can construe the explanation in an internalist manner without appeal to rules of English or external properties.

(IE)

(i) If S is competent in English, S's interpretation of the marks *himself* is constrained to be jointly interpreted with the interpretation of other marks occurring in the inscription i.e., the interpretation is 'reflexive'.

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intuition; after all, the abstracta just are the essential linguistic properties pruned of any contingent excrescence (what Katz calls their 'cohesiveness'), not so for Devitt's concrete tokens. Even so, Katz's analogy does not hold up. A linguistic theory is meant to explain the data – why we have the intuitions we have, and not others – whereas a mathematical theory does not explain why we have the mathematical intuitions we have. It is the job of psychology, I take it, to explain our mathematical competence, regardless of whether Platonism is true or not.

(ii) The constraint is such that the interpretation of *himself* is dependent on the interpretation of a mark categorised by S as a c-commander of the first interpretation.
(iii) To determine a c-commander, S must project the lexical interpretations into a hierarchical structure determined by the interpretations mapped onto the given marks.
(iv) Based on the projection, the interpretations of *Fred* or *brother* do not c-command the reflexive interpretation; only the interpretation of *Fred's brother* does.
(v) Therefore, the reflexive is jointly construed with the DP interpretation.

We have made no appeal to rules applying to external languages or external linguistic properties. We have appealed to abstract structures that S maps onto the marks for the purpose of interpretation, but the marks have no such properties themselves. So, the explanation doesn't require an appeal to linguistic reality, but it does clearly require S to be in a complex of mental states that the grammar describes.

On the second point, the (EE) explanation is essentially parasitic on the internalist explanation. (EE) simply posits the structure to be 'out there'. But S must be sensitive to it such that she can get the right interpretation; otherwise, we have no explanation of the cognitive phenomenon. (EE) sweeps this point under the rug by saying that S is linguistically competent in English. Well, in the present case, what does that mean? It means that S can reliably (unthinkingly) map the right interpretation onto the inscription, but that explanation presupposes that S employs the linguistic technology of being a reflexive, being a c-commander, etc. under the appropriate constraints as (IE) describes. That is what it means to take seriously the explanations linguistics offers. The magic of *respect* is neither sufficient nor necessary for this explanatory task, for even if the structure were 'out there', it must also be such that S could survey it, as it were, to determine what c-commands what, so S must be credited with what (IE) offers. And now we see that the external structure rules and appeal to languages are just explanatory danglers.

The crucial issue here is parsimony. The linguistic explananda are cognitive. One explanation of them is that external concreta have complex syntactic properties and our judgements on them are explained by some sensitivity or respect we have towards them. This position incurs *at least* two burdens: one is obliged to (i) explain how such properties are externally realised and (ii) characterise the internal equipment that allows our mind/brains to respect such putative structure. My internalist conception of the situation does without the external properties and so incurs no burden of accounting for their external existence or of how we get to respect them. The burdens the internalist shoulders are in fact shared by Devitt's model *in addition* to the two just described.

First, we need to account for 'Saussurean arbitrariness', how one sound/mark gets associated with a cluster of linguistic features. That is a problem for everyone and merely placing structure outside the mind goes no way to solving it, for the association remains arbitrary either way insofar as no acoustic type is inherently nominal or verbal, say. The association, however brought about, is a cognitive

effect: the very phenomenon of arbitrariness is that the external marks are not essentially suited to enter into any particular association, beyond general constraints on frequency band, etc., if we are talking about sound (*mutatis mutandis* for sign). One might imagine that resolving the problem of arbitrariness just is resolving the respect problem in Devitt's sense. That thought would be mistaken, for the association does not render linguistic properties external, but merely renders the signs or vehicles of lexical items that realise such properties external.

Secondly, we should like to explain how cognitive structure is neuronally realised. Again, that is also a desideratum for Devitt, for he does not imagine that the relevant internal mechanisms on his model are readily understandable at the neuronal level. Of course, one may here appeal to general cognitive structure (a 'language of thought') rather than specifically linguistic structure, but the structure remains intrinsically internal and so does not entail or presuppose the existence of external linguistic properties.

So, in sum, external syntactic properties are surplus to explanatory requirements. They bring with them new problems and go no way to resolving or even making sense of current problems every theorist faces.

2.4.3 Invariance

The upshot of the preceding may be encapsulated by saying that generative theories target the invariance of cognition within the exercises of language capacity generally. The production and consumption of language can exploit a range of modalities or 'vehicles', such as acoustics, hand gestures, orthography, facial movements, and potentially other sets of properties. In itself, this does not signal trouble for Devitt's 'linguistic reality', for he is not so benighted to identify linguistic properties with any first-order properties of concreta; the linguistic properties are intended to be second-order properties of the concreta ('high-level, functional'). This escape route, however, evades the important moral that the variability of vehicles makes evident. Any given set of properties that are utilised as linguistic vehicles must be sufficiently differentiated to support the differences between the linguistic properties, even though there is no equivalence relation between the two (e.g., just consider empty categories and phrase boundaries). If we consider the super-set of potential linguistic vehicles, then there appears to be no interesting generalisation to be had at all. In other words, there are no second-order non-linguistic properties that support the linguistic properties across the range of vehicles; the relevant properties only come into view from the perspective of the cognitive capacities of speaker-hearers. Thus, the language system is understood to be modality-independent, even though we look at certain modalities for evidence for the character of the independent language system, on the ways in which it constrains our understanding of vehicles across all modalities; particular vehicles themselves are differences that don't make a

difference.[18] In this light, to identify linguistic properties with properties of the external concreta, no matter how functional, is to conflate presentation of data with phenomena, as if photographic plates of starlight used in confirmation of general relativity meant that general relativity is a theory of a particular class of such plates (suitably idealised) as opposed to the general gravitational field of space-time.

I have argued that Devitt's distinctions do not apply to language as conceived by linguistics. They presuppose linguistic externalia and so they are not neutral, regardless of whether they apply to other systems or not. Furthermore, linguistic theory has no apparent need of the externalism that the distinctions enshrine: its explanations neither presuppose nor entail externalia.

If all this is right, we have knocked out Devitt's second premise. It is at best an indirection to construe a generative theory's explanatory work as going via an external language, replete with the properties our theory posits. The explanations work by crediting the hypothesised structures to speaker-hearers alone. In this minimal sense, the theories' posits are psychologically real, to the extent to which we accept any given explanation as being correct, independent of an adequate account of the human brain's mechanisms at a less abstract level. Now let's turn to Devitt's fourth premise.

2.5 Questioning Premise (4): Interpreting a Grammar

Devitt's fourth premise claims that a grammar is best interpreted as a theory of the structure rules of linguistic expressions, not of linguistic competence. Remember, according to Devitt, 'expressions' are external, concrete tokens and 'competence' is a production/consumption processor. Devitt advances six reasons for this claim. I shall take each in turn and argue that none of them supports the premise.

2.5.1 The Intuitive Conception of Competence

Devitt (2006a: 31) writes:

> [The] actual and possible idealised outputs, governed by a system of rules and fitting into a structure, *are* what we would normally call a language. Indeed wherever there is a linguistic competence there *has* to be such a language, for the language is what the competence produces: the language is what the speaker is competent *in*; it is definitive of the nature of the competence.

First, it is unclear why our common-sense notion of language (or 'what we would normally call language') is germane to linguistics, any more than our

[18] This is one of the chief messages of Hauser et al. (2002). For neurophysiological findings on the modality-independence of the language faculty, see Pettito (2005).

common-sense conception of matter is germane to physics, or our common-sense conception of life is germane to biology. Linguistics seeks to explain a certain class of phenomena; the discipline is not constrained to cleave to our intuitive conception of language in doing so.[19] To be sure, it might turn out that the idea of an external language does have a role to play in linguistic explanation, but the claim that it does is a meta-theoretical hypothesis, which, as such, is neither plausible nor implausible in the absence of reflection on what the first-order theories explain.

Secondly, similar remarks apply to Devitt's conception of competence. Devitt's idea of competence as the (idealised) production of sentence tokens may or may not be some kind of conceptual truth. The matter is academic, for 'competence' as coined by Chomsky (1965) is a technical notion, not our ordinary notion. As employed by linguists it designates an internal system that interfaces with further internal performance components; it is not a performance system itself; it has no products. If the term is misleading, then we are free to drop the notion and speak of the 'language faculty' or an 'I-language', neither of which has resonance for normal speakers.

2.5.2 *Chomsky's Own Words*

Devitt (2006a: 31) claims that Chomsky himself commends a version of externalism about grammar. He quotes the following:

> The fundamental aim in the linguistic analysis of a language L is to separate the *grammatical* sequences which are sentences of L from the *ungrammatical* sequences which are not sentences of L and to study the structures of the grammatical sequences. (Chomsky 1957: 13)

Devitt is perfectly correct to think these remarks appear to support his conception.[20] He neglects to mention, however, that this way of characterising the aim of linguistic analysis is unique to just the very beginning of *Syntactic Structures*. Two pages

[19] Chomsky (1981: 7) writes:

> The shift of focus from language (an obscure and I believe ultimately unimportant notion) to grammar [I-language] is essential if we are to proceed towards assimilating the study of language to the natural sciences. It is a move from data collection and organization to the study of the real systems that actually exist (in the mind/brain) and that enter into an explanation of the phenomena we observe. Contrary to what is widely assumed, the notion "language" (however characterized) is of a higher order of abstraction and idealization than grammar, and correspondingly, the study of "language" introduces new and more difficult problems. One may ask whether there is any reason to try to clarify or define such a notion and whether any purpose is served in doing so. Perhaps so, but I am sceptical.

See Collins (2008c) for wide discussion of these themes.

[20] This particular passage from *Syntactic Structures* has often been cited by defenders of externalism: e.g., Cummins and Harnish (1980: 18), Katz and Postal (1991: 521), and Postal (2004: 5, 174). Curiously, none of the critics seem to have been bothered to understand the remarks in their proper context (see below and Collins 2008c for lengthy discussion).

distributed throughout a linear structure.[23] The situation for Devitt deteriorates still further when we introduce the full suite of so-called 'empty categories', which have no register in any concrete string at all. Indeed, case, which Devitt mentions, is hypothesised to hold for all nominals within a structure, whether it is morphologically marked or not. There is nothing 'straightforward' about such theoretical technology. Even the lowly word is abstract and not to be found on Devitt's pages or any other page. A word is commonly defined as a cluster of features: syntactic, phonological, and semantic. Such features are not, in any obvious sense, properties of ink marks, and so words can't be understood as ink marks either.

It bears emphasis that I am not suggesting that it is *impossible* for linguistic theory to be construed quasi-nominalistically in the way Devitt desires. My present point is merely that it is far from obvious that it can be done and belief in the prospect is certainly not a meta-theoretical commitment of linguistics; quite the contrary. Imagine, however, that the kind of realism Devitt favours were the explicitly favoured meta-theory of linguists. The linguists would be under no particular obligation to spell out their position, no more than mathematicians, who tend to favour Platonism, are obliged to spell out their metaphysics. On the other hand, surely it is the job of the *philosopher* of linguistics precisely to spell out their meta-theory, much as Katz (1981) attempted to spell out his linguistic Platonism. Suffice it to say, nowhere does Devitt attempt any analysis of the properties he mentions to render them as high-level functional properties of external marks.

2.5.4 Intuitions and Aboutness

I have argued that the phenomena linguistic theory seeks to explain are cognitive. Devitt (2006a: 31), however, writes:

> [T]he linguistic evidence adduced for a grammar bears directly on a theory of the language in my sense; evidence about which strings of words are grammatical; about the ambiguity of certain sentences; about statement forms and question forms; about the synonymy of sentences that are superficially different; about the difference between sentences that are superficially similar; and so on.

We have already seen that, notwithstanding first appearances, this is not so. Evidence of ambiguity, say, does not pertain to external marks in themselves, but first to the speaker-hearer who consumes or produces the marks *as* ambiguous. Devitt (2006a: 32) adds a twist to his position. In response to the charge that data are also gathered from speaker-hearer intuitions, he happily concedes that this is so, but ripostes that

[23] One can think of a phrase structure analysis as the description of how categorical information relates a set of lexical items to each other. The relations are not ones identifiable on the surface of the strings, although, of course, competent speaker-hearers are able to map phrase structure to and from linear strings. The relation between linearity and phrase structure is contested, but no one suggests that phrase structure just is a property of linear organisation, no matter how high-level or functional (see Kayne 1994; Nunes 2004).

the linguist is interested in 'correct' or 'accurate' intuitions, and so the data still bear on linguistic reality, i.e., that which the intuitions are *about*. As a riposte to my argument, then, Devitt might contend that the speaker-hearers' understanding is properly evidential, but only if it is getting right what the linguist is primarily interested in, *viz*., linguistic reality, not the cognition of it. Of late, there has been much discussion of the status of intuitions in linguistics. Happily, in order to tackle the thought that intuitions must be accurate to be evidential, we may eschew most of the disputes.[24]

First, Devitt (2006a: ch. 7) conceives of intuitions as 'theory laden' metalinguistic propositional attitudes, of the form, *S judges/intuits P is G*, where *S* is the informant, *P* is a description of a sentence, and *G* is a linguistic property (*ambiguous, grammatical, interrogative, etc*.). The thought is that much as we have intuitions about the properties of any other objects in our environment, so we have intuitions about the properties of sentences.

Space precludes a thorough discussion of this conception of intuitions, but we may still immediately see the oddity of the position as an analysis of what linguists mean by intuitions.[25] On this conception, the linguist can only gather intuitive data from speaker-hearers capable of wielding the appropriate linguistic concepts (ambiguous, grammatical, etc.), but this is far too restrictive a condition. Speaker-hearers need have no such concepts at all for them to find strings ambiguous or acceptable.[26] It is the linguist, not the informant, who uses such concepts. This is obvious in the case where the informants are children, whose utterances are controlled in an artificial scenario, but the point holds generally. Besides, even if speaker-hearers were to possess the relevant concepts, their employment of them would be of no obvious interest to the linguist. The linguist is not interested in informants as amateur linguists. This is transparent when we are explicitly concerned with data on phenomena that have no common-sense label, such as the head of a phrase, or the interpretation of PRO, or reconstruction sites. Devitt (2006a: 98–103) is aware of all of this, but takes such considerations to signal a problem for the use

[24] See, for example, Schütze (1996) and Maynes and Gross (2013) for surveys of positions on the nature and status of intuitions. See Ludlow (2011) and Sprouse and Almeida (2013) for sound discussions of why much of the controversy is misplaced.

[25] It is useful here to distinguish between 'linguistic hunches' and 'linguistic intuitions'. The former are suggestions from theorists themselves about the status of a construction, not the naïve view of an informant. Of course, to distinguish between these cases is not to suggest that the theorist will depart from the naïve informant in what they reckon to be acceptable or unacceptable; on the contrary, there is great concord (Sprouse and Almeida 2013). The point, rather, is that the theorist may have a hunch about the reason for a construction's unacceptability, say, in a way the informant may not.

[26] Since *Aspects* (1965: 11–15), Chomsky has distinguished between grammaticality and acceptability. The former is a theoretical notion referring to what structures a given grammar generates. Speaker-hearers do not have grammaticality intuitions, but only acceptability ones, which a grammatical theory seeks to explain, in concert with other theories. Acceptability refers to what a speaker-hearer finds non-deviant, OK. It is a complex empirical matter, of course, to determine how acceptability bears on grammaticality in particular, as opposed to matters of semantics, pragmatics, lack of imagination, contextual priming, etc.

of intuitions as data, for the informants can have no intuitions, *qua* meta-linguistic judgements, about the phenomena since they lack the relevant concepts. Devitt's reasoning here is unfortunate, for he is right to assail the meta-linguistic conception of intuition as being of not much good in linguistics. He just goes wrong in thinking that such a conception is one the linguist adopts.[27]

Intuitions clearly bear on the relevant phenomena, whether the informants have the relevant concepts or not. All Devitt's reasoning in fact shows is that the kind of meta-linguistic reflection he has in mind is not the evidential basis of linguistics. For example, trivially, (5) provides evidence that the head of a subject DP cannot occur in an adjoined relative clause:

(5) a. The men the woman met loved themselves
b. *The men the woman met loved herself

The head of a phrase is that lexical item that determines the category of the phrase in which it occurs, and so determines how that phrase as a whole can relate to other items in the structure, e.g., in terms of agreement. Here we see that the DP *the men* in (5a) agrees in number with the reflexive object of the verb, regardless of the presence of the singular *the woman* closer to the reflexive. In (5b), *the men* does not agree with the reflexive, and this produces unacceptability, showing that *the woman* of the relative clause cannot be the head of the phrase, even though it has the right morphology to agree with the reflexive. Devitt's error rests in his claim that for intuitions to be evidence for *X*, they must be *about X* (the concept of an *X* must be part of the intuitive content). Clearly, no linguist has ever employed such a restrictive conception of the evidential role of intuitions, for a host of parade examples, like the case of (5), would have been ruled out immediately.

In general, evidential relations are not restricted by 'aboutness', and so there is no reason to expect anything different in linguistics. The observation of starlight bears on the curvature of space-time, but one's observations are not *about* space-time. The beaks of finches bear on genetic mutation rates, but observations of beaks are not *about* DNA. For *Y* to count as evidence for *X*, it suffices that *X* would explain the occurrence of *Y*, while not-*X* would not (or not do so as well, or not in combination with antecedent commitments, etc. – fill in one's favourite account of explanation). The same minimal principle applies in the case of linguistics; intuitive data do not usher in a novel notion of evidence that involves *aboutness*. This leads us to our second point.

Devitt contends that intuitions must be 'accurate' for them to count as evidence for the relevant linguistic hypotheses. This is not so in any straightforward sense. First, the relevant intuitions need not be propositionally articulate. They can be as minimal as 'Dunno', or 'Can't make sense of that', or 'What is that word doing

[27] Devitt (2006a: 96) does provide evidence that something like the 'voice of competence' view is widely held, that intuitions are direct evidence on the nature of the language faculty, as if one can intuit that a construction is *F*, for some grammatical property *F*. However this evidence should be read, it does not militate for an orthodox meta-linguistic conception of intuitions in linguistics (see Collins 2008a; Ludlow 2011: ch. 3).

there?', etc. It is up to the theorist to determine just what the intuition is evidence for; it can't be read off the propositional structure (if any) of the judgement. This is clearly the case where the intuitions are concerned with truth conditions or what someone would say in a given situation. Here, we are eliciting semantic or discourse responses in order to determine the relevant syntactic constraints.[28] In such cases, the informant is not at all accurate about what we are interested in; still, we seek to infer from what she does say to the real object of our inquiry. Again, it is not so much that Devitt does not appreciate these points (cp. Devitt 2006a: 99), but that he draws the wrong conclusion: that there is a problem with the linguist's dependence on intuitive data. Read aright, there is no problem at all, for the relevant intuitions are not accurate meta-linguistic judgements.

Secondly, intuitions can readily serve as evidence even where they are inaccurate (what Devitt (2006a: 227–228) himself calls 'performance errors'). For example, consider these two familiar cases:

(6) a. The horse raced past the barn fell
b. The butter spread on the toast melted

Normal speakers find (6a) unacceptable, while (6b) is understood to be just fine. Theoretically, though, neither is syntactically deviant. There is a parsing problem with (6a), whereby we treat *race* as if it were the main verb and so are 'led down the garden path' not to expect a further verb at the end of the sentence. The diagnosis is that *raced past the barn* is a relative clause: What fell? The horse (who/that was) raced past the barn. There is no problem with (6b), for we do not take *spread* to be a main verb. Why? Well, part of the story is that *The horse raced past the barn* is ambiguous between a sentence and a DP with an adjoined relative clause. On the other hand, *The butter spread on the toast* is not ambiguous; it can only be a DP, for *the butter* is not a suitable subject of *spread*.

The upshot is that here we have a case where informants are inaccurate about their competence, but we still retrieve robust evidence about their competence. Again, for intuitions to count as evidence for a grammar it suffices that we can inferentially trace back to our hypothesised grammatical principles such and such intuitions as opposed to so and so intuitions informants do reliably report. This inferential relation doesn't demand *aboutness*, or even accuracy of the intuitions.

2.5.5 Non-intuitive Data

An apparent problem for Devitt's position is that data that bear upon linguistic theory can also come from what he would regard as kosher psychological research, such as language processing and acquisition. That is *prima facie* odd, if linguistic

[28] For extensive use of such intuitive data from children, see, e.g., Crain and Thornton (1998) and Roeper (2007).

theory is not about anything essentially cognitive. Devitt (2006a: 32), however, contends that

> the *psycholinguistic* evidence about language comprehension and acquisition, offered to support the view that a grammar is psychologically real, bears directly on a theory of the language, in my sense… The right theory of a language must ascribe rules to the language that competent speakers of the language respect: the Respect Constraint.

The idea here is that evidence on processing (what Devitt calls competence) still serves as evidence for the language in his external sense, for the processing rules must *respect* the rules of the language itself.[29]

It is certainly true that much of psycholinguistic research is informed and constrained by syntactic theory, which in turn is answerable to the findings of the research. This relationship is exactly as one would predict from the psychologistic conception. Whether the relationship can also be finagled to support Devitt's conception turns on how we are to understand *respect*, the supposed constraint that the mechanism that produces linguistic tokens respects the syntactic properties of those tokens. There is a problem. Familiarly, there are mismatches between the licence syntactic theory gives a structure and how we in fact are able to process or acquire competence with it. We saw an example of a parsing mismatch just above with the garden path sentence, and there are many others. Similarly, in the case of acquisition, children tend to regularise, interpret certain structure to be flat, pronounce medial copies, etc. In short, children make 'errors'. Here is a question: Are these mismatches cases of respect? The standard generative position on such cases is that they reflect a difference between competence and performance. So, there is no real respect at all in Devitt's sense, where an internal process respects the properties of its external products; there are internal interfaces, which are more or less noisy. Indeed, Chomsky (1991: 49) has gone so far as to suggest that language is 'in general unusable', by which he means that the language faculty is usable just to the extent that the interfacing components can interpret the structures it makes available to them, but the faculty itself is not designed to be so usable. In short, the generativist is interested in such mismatches between syntactic licence and processing/acquisition, and has a ready general explanation for it in terms of a competence/performance interface (of course, this is just to signal the *kind* of explanation to be offered).

[29] Often, externalist critics of Chomsky neglect to offer an account of the role of psychological evidence in linguistics. For example, Cummins and Harnish (1980), without denying the existence of something like a language faculty, suggest that Chomsky has somehow begged the question by presuming linguistics to be a branch of psychology. Chomsky (1980c: 43) correctly replies that if one is concerned with the truth of one's theories, 'as opposed to one or another way of axiomatizing some range of data', then one should seek all available evidence, including '"psychological constraints" deriving from other studies' (see note 7). Katz and Postal (1991: 526–527) defend Cummins and Harnish by suggesting that Chomsky begs the question again by presuming that the truth of a linguistic theory could only be a psychological matter. Not a bit of it. Chomsky's point is merely that Cummins and Harnish presume that a certain data source is somehow irrelevant – an unprincipled presumption shared by Katz and Postal.

clear every time he uses the notion, but let us just consider the introduction of the expression into the literature. Chomsky (1986: 22) asks us to consider the formulation 'H knows L', where L is a language:

> [F]or H to know L is for H to have a certain I-language. The statements of a grammar are statements of the theory of mind about the I-language, hence statements about structures of the brain formulated at a certain level of abstraction from mechanisms… UG is now construed as the theory of human I-languages, a system of conditions deriving from human biological endowment that identifies the I-languages that are humanly accessible under normal conditions (Chomsky 1986: 23)

Here, the apparent external relation 'K(H, L)' is analysed as H being in certain brain states abstractly characterised in terms of an I-language, where a grammar or theory is about such states so characterised, i.e., at a level of abstraction from mechanisms.[33] So, an I-language is not the object of knowledge or even a product of the mind, but the state of the mind/brain that is picked out by the informal locution 'H knows L'. Chomsky couldn't mean anything else, for *I-language* is a term of art introduced to focus attention on internal states as the object of the theory rather than the putative products of the mind (cp. Chomsky 2001: 41–42).

In short, Devitt's misreading of Chomsky gives us no reason to think of linguistics as being implicitly committed to the meta-theory Devitt favours. This is hardly surprising, of course, for it is virtually beyond belief that Chomsky and everyone else in the generative tradition could have been confused about the most elementary meta-theoretical principle of their field, which developed out of a rejection of all forms of nominalism.

2.6 Concluding Remarks

The aim of the foregoing has not been to show that every non-cognitivist interpretation of linguistic theory must be mistaken. I should say, though, that, once read aright, the psychologism generative linguistics offers is almost banal: linguistic theory's posits are psychologically real because they serve to explain psychological phenomena, and only explain such phenomena – the explanations they furnish can only be parasitically construed as speaking of an external linguistic reality. Unfortunately, so much of the philosophical controversy that generative linguistics has occasioned is not due to any inherent difficulty of interpretation of the theories, as, say, we find in quantum mechanics. The disputes arise from philosophical presuppositions being imposed upon linguistics, from which perspective the theories can seem dubious or not properly supported, in need of a more intimate relation

[33] See Matthews (2007) for a general treatment of propositional attitude attribution consistent with this approach. Matthews suggests, after others, that the relational form of propositional attitude attributions is measure-theoretic, allowing, but not requiring, the mind/brain states so picked out to be monadic rather than relational, just as *X weighs 3 kg* has a relational form, even though the underlying magnitude picked out is a monadic property.

with ‘reality’. The reality a theory speaks of, however, just is the phenomena it primitively explains.[34]

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Chapter 3
Priorities and Diversities in Language and Thought

Elisabeth Camp

Abstract Philosophers have long debated the relative priority of thought and language, both at the deepest level, in asking what makes us distinctively human, and more superficially, in explaining why we find it so natural to communicate with words. The "linguistic turn" in analytic philosophy accorded pride of place to language in the order of investigation, but only because it treated language as a window onto thought, which it took to be fundamental in the order of explanation. The Chomskian linguistic program tips the balance further toward language, by construing the language faculty as an independent, distinctively human biological mechanism. In *Ignorance of Language*, Devitt attempts to swing the pendulum back toward the other extreme, by proposing that thought itself is fundamentally sentential, and that there is little or nothing for language to do beyond reflecting the structure and content of thought. I argue that both thought and language involve a greater diversity of function and form than either the Chomskian model or Devitt's antithesis acknowledge. Both thought and language are better seen as complex, mutually supporting suites of interacting abilities.

Keywords Systematicity · Language of thought hypothesis · Non-sentential logic · Modularity · Maps · Diagrams · Discourse structure · Illocutionary-force-indicating devices · Williams Syndrome

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evidence not just that thought is highly systematic, but that it has a specifically sentential structure. In this section, I argue that if we bracket off linguistic evidence about the format of thought, then the case that thought has distinctively sentential format becomes much weaker.

The Language of Thought Hypothesis is amenable to at least two construals (Camp 2007). On the stronger construal, thought is claimed to possess a distinctively linguistic structure; on the weaker one, it is merely like language in being a compositional representational system. For Fodor's central aim of defending computationalism against connectionism (Fodor and Pylyshyn 1988), the weaker construal suffices. Fodor himself consistently extends his arguments to nonhuman animals (e.g. 1987), and offhandedly assumes that pictorial representational models are compositional (2007). Like Fodor, Devitt recognizes that an appeal to representational complexity doesn't entail the strong claim about specifically sentential structure, because maps and other non-linguistic representations have a syntax that is "very different" from language (146). And like Fodor, Devitt appeals to the cognitive states of non-human animals as evidence about the nature of thought – in his case to establish thought's temporal priority over, and contemporary independence from, language (131).

So, the argument from systematicity alone does not justify an inference to sentential structure, especially in the current argumentative context; and Devitt acknowledges this. However, he argues that the need to explain the *processes* of thought does. "Formal logic," he says, "gives us a very good idea of how thinking might proceed" (146–147); by contrast, we "have very little idea how thinking could proceed if thoughts were not language-like" (147). Devitt says very little about what he means by 'formal logic', but he appears to have something like a traditional predicate calculus in mind. Bermudez (2003: 111) makes the same claim more explicitly: "We understand inference in formal terms – in terms of rules that operate on representations in virtue of their structure. But we have no theory at all of formal inferential transitions between thoughts that do not have linguistic vehicles" (see also e.g. Rey 1995: 207).

Although this assumption is common – and understandable, given the intimate historical connection between analytic theorizing about inference and the development of predicative logic – it's not true that formal sentential logic provides our only model for "how thinking could proceed" in general. Recent successes with connectionist models of "deep learning" have challenged the computational orthodoxy (e.g. Schmidhuber 2015); while hierarchical Bayesian models have introduced probabilistic inference to computational methodology in ways that function very differently from traditional logics (Tenenbaum et al. 2011). So it is not obvious that systematic cognitive abilities must be implemented by a system of representational vehicles which are comprised of recurrent symbolic parts governed by fixed, formally-specified rules. However, even assuming that they must be implemented by such a system, a diversity of representational formats can satisfy this criterion.

First, maps – both those, like seating charts, that exploit a finite base of elements and principles of composition, and also those, like road atlases, that exploit potentially continuously varying shapes, colors, and textures – can be constructed and

interpreted by means of formal principles (Pratt 1993; Casati and Varzi 1999; MacEachren 2004). These principles depart substantively from those of language (Rescorla 2009; Camp 2007, 2018a). And they can be exploited to define rules for updating and integrating distinct maps within a larger cartographic system (or from inter-translatable systems), so long as they represent regions that are themselves related in spatially appropriate ways (e.g. that are at least partially contiguous). Given a definition of validity that is not specifically linguistic, we can assess such transformations for validity (Sloman 1978). Finally, there is substantive psychological and neurophysiological evidence that both people and other animals do process spatial information, including abstract information about spatial relationships, in a distinctively spatial way (Morgan et al. 2011; Franconeri et al. 2012; Marchette et al. 2017).

Devitt's second reason for rejecting the hypothesis that thought might be structured like a map rather than a set of sentences is that maps are expressively limited in comparison to language (146). In comparison to the invocation of constraints on explaining processes of thought, this argument is more compelling. While the expressive limitations of maps are often exaggerated – in particular, ordinary maps can be enriched to represent negation, tense, disjunction, and conditionals in various ways – it is true and important that maps cannot represent information that is not spatial. Most notably, they cannot represent abstract quantificational information (Camp 2007, 2018a).

At the same time, though, there also exist diagrammatic systems, which are likewise formally defined and differ substantively from language (and from one another), and which have a much richer expressive range than maps (Shin 1994; Allwein and Barwise 1996). Moreover, some of these diagrammatic systems have robust, rigorous practical applications in science and mathematics (Tufte 1983; Giardino and Greenberg 2014). Indeed, De Toffoli (2017) argues that diagrams are useful in mathematical practice precisely because the *process* of using them – by manipulating constituent algebraic elements – constitutes a valid form of inferential 'calculation'. Likewise, diagrams can be distinctively useful in tracking information about abstract relations in the real world. In particular, directed graphs or 'Bayes nets' offer a rigorously defined diagrammatic format for representing and manipulating causal information, one that is arguably more effective than sentential logics at least for certain purposes (Pearl 2000; Elwert 2013), and that has been argued to implement causal knowledge in children (Gopnik et al. 2004) and possibly non-human animals (Camp and Shupe 2017).

Thus, given this diversity of formally definable, practically relevant representational systems, there can be no in-principle argument that thought *per se* must be sentential. At the same time, a more modest version of the appeal to expressive power can be used to establish that at least some human thought does have a distinctively sentential structure (Camp 2015). Language is distinguished from other representational formats by its abstractness, in at least three respects. First, it employs a highly *arbitrary* semantic principle mapping basic elements to values. Second, it employs a highly *neutral* or general combinatorial principle (e.g. predication, functional application, or Merge), which itself has only minimal representational

significance. And third, its principles of construction and interpretation are defined entirely in terms of operations on the values of the basic elements, rather than on the vehicular elements themselves.

Most diagrammatic systems are like language, and unlike most maps, in employing a highly arbitrary semantic principle, largely freeing them of significant constraints on the types of values their constituents can denote. In contrast to maps, some diagrammatic systems are also like language in employing highly neutral combinatorial principles: for instance, Venn diagrams use spatial relations to represent set-theoretic relations among denoted entities. The relatively high abstractness and generality of those set-theoretic relations permits such diagrams to represent relations among a correspondingly wide range of entities. (By contrast, other diagrammatic systems employ principles with more robust significance, which impose commensurate expressive restrictions: for instance, because phylogenetic tree diagrams assign branching tree structures the significance of branching ancestry, they invariably represent the entities denoted by the nodes in a branching tree as related by ancestry and descent; Camp 2009a.)

However, even the most general diagrammatic systems fail to be fully abstract along the third dimension, of vehicular implementation. That is, simply in virtue of being diagrams, their construction and interpretation rules exploit the spatial (or topological) structure of their representational vehicles. And this inevitably generates some expressive restrictions: for instance, even sophisticated Venn diagrams can only represent relations among sets that can be implemented with closed continuous figures in a single plane (Lemon and Pratt 1997).

Thus, Devitt is right that language is distinctively expressively powerful, in virtue of its distinctively abstract semantic and combinatorial properties. Still, the class of complex relations that exceed the scope of diagrammatic representation is rather rarified, and so an advocate of LOTH might be nervous about resting their case for expressive generality on them. To bolster their case, they might point to the fact that ordinary human thought is highly intensional in order to suggest a more pervasive and relevant potential expressive restriction on non-sentential systems. Diagrammatic systems can represent at least some kinds of modality – for instance, Pearl (2009) argues that directed graphs are uniquely equipped to capture counterfactual causal inference. But most diagrammatic systems are extensional; and the best-developed and most general intensional logics are all extensions of the predicate calculus.

Nonetheless, even if we grant that intensional relations, as well as certain extensional relations among sets, can only be expressed in language, this still falls well short of establishing that "the innate structure rules of thought" have a sentential syntax and semantics, in the way Devitt needs. First, like the basic argument for LOTH, inferring that the logic of intensionality must be predicative relies on an appeal to a lack of available alternatives that is vulnerable to subsequent counterexemplification. Second and more generally, even if a formal predicate calculus does constitute our most rigorous general model for "how thinking could proceed" when we analyze "thought" in terms of the prescriptive "laws" of thought, it is frustratingly obvious that much, even most actual human thinking fails to conform to this

model (Evans and Over 1996). The various species of intensionality have proven to be especially recalcitrant to systematic formal analysis. Given that, models of thought that appeal to schemas and other partly abstract, partly iconic modes of representation may hold more promise for capturing the distinctive contours of actual ordinary human cognition, including especially intensionality (Johnson-Laird 2005).

Finally and most importantly, establishing that some of the contents that people sometimes think about can only, or most easily, be represented and manipulated sententially doesn't establish that all thought takes that form. Devitt, like many advocates of LOTH, implicitly assumes that thought is governed by a single set of innate structure rules; but empirical evidence suggests that humans regularly and spontaneously employ multiple representational formats. Here, one might argue for the centrality of sententially-structured thought on the grounds that its expressive generality uniquely equips it to integrate thoughts encoded in distinct formats (Carruthers 2003). But this too is a substantive argument by exclusion, which proponents of modularity can resist in various ways (Rice 2011). More importantly, it would still not establish language as the exclusive format for thought, only as the privileged vehicle for integration when it occurs. And advocates of cognitive modularity often point to the pervasive failure of full substantive integration in human cognition in support of a multiplicity of representational forms and structures (Fiddick et al. 2000).

Thus, we have multiple reasons to think that human cognition can, and does, take multiple forms. And while I think we do have good reasons to accept that a significant amount of human thought is indeed sententially structured (Camp 2015), it is very much an open possibility that this reflects the influence of language as a biologically-endowed and overlearned communicative medium, rather than the other way around.

3.2 Language as Expressing Thought: Diversities in Linguistic Function

The central lesson of §3.1 was that we have good reasons to reject Devitt's claim that human thought in general takes a sentential form, akin to a predicate calculus. Suppose, though, that we do accept that assumption. Shifting from thought to language, the next big move in Devitt's argument for the priority of thought is the claim that language takes the form it does *because* it expresses thought, and in particular because the structure of language reflects the structure of thought. (As Dummett (1989: 197) puts it, "a fully explicit verbal expression is the only vehicle whose structure must reflect the structure of the thought.") In this section, I argue that while expressing thought is indeed one central thing that language does, it also has other important functions.

Devitt doesn't offer much detail about what it means for language to express thoughts. 'Thoughts', for him, are "mental states with meanings" (142): "propositional attitudes, mental states like beliefs, desires, hopes, and wondering whethers" (125). 'Expressing' is a matter of "convey[ing] a 'message'" by "uttering a sentence of the language to express a thought with the meaning that the sentence has in that language" (127), where that 'meaning' is determined by public conventions for use (132). So his overall picture is that language expresses thought by combining words whose conventional meanings match the concepts that constitute the propositional attitude expressed, in a structure that mirrors the structure of that propositional attitude.

An initial, somewhat ancillary worry focuses on the role Devitt assigns to conventional meaning here. He needs to do this to establish his overall negative conclusion, that "the primary concern in linguistics should not be with idiolects but with linguistic expressions that share meanings in idiolects" (12). However, the move from the claim that language expresses thought to the conclusion that linguistic meaning is conventional is too quick. Even many theorists who embrace a conception of language as a communicative device and who accept that linguistics should study "shared meanings" reject the conventionality of meaning. In particular, where Devitt simply assumes that the conventional meaning of an uttered sentence "often" matches the thought that the speaker intends to express with it (132), 'radical contextualists' like Recanati (2004) argue that many if not all utterances involve significant context-local influences that are not triggered by elements within the sentences uttered; and they often conclude, with Davidson (1986), that any appeal to convention is an irrelevant chimera. I agree with contextualists that most utterances involve context-local influences on communicated meaning. But I also agree with Devitt that conventional meaning plays an important role in the theoretical explanation of linguistic communication (Camp 2016). However, establishing this latter conclusion requires closer attention to the dynamics of ordinary discourse than Devitt provides; and I am suspicious of the claim that language as such, shorn of pragmatic modulation and amplification, typically expresses complete thoughts that speakers would be willing to endorse, let alone care to communicate.

Let's put general worries about the existence and role of linguistic convention aside, though, and focus just on what conventions for direct and literal use might actually be like. Crucially, linguistic terms and constructions implement a variety of conventional functions, not all of which can be smoothly assimilated under the rubric of 'expressing thought'. One key source of complexity centers around illocutionary force, which lies at the intersection of syntax, semantics, and pragmatics. Standard linguistic theories now reject the traditional 'marker' model, on which different sentence types conventionally mark distinct forces applied to a common propositional core. Instead, declarative sentences are standardly taken to denote propositions, while questions denote partitions of possible worlds and imperatives denote goals or properties that are indexed to the addressee (see e.g. Roberts 1996/2012, 2018). None of these denoted objects are themselves "thoughts," in Devitt's intuitive sense; rather, utterances of sentences of these three syntactic types conventionally function to undertake the speech acts of assertion, interrogation, and

rendered at-issue relative to the larger discourse structure (Siegel 2006; Simons et al. 2010; Camp 2018b). Given this, an empirically adequate linguistic theory needs not only to acknowledge and explain these 'peripheral' constructions in isolation, but also to analyze the familiar core logical machinery, including negation, disjunction and conditionalization, in a way that reflects the diversity of uses to which that machinery can be put in natural language, which, as we've seen, includes operating on non-representational semantic values.

'Dynamic' approaches to linguistic meaning, which analyze the meanings of words in terms of their compositional contributions to the 'context change potentials' or 'update instructions' associated with sentences in which they occur (Heim 1983; Groenendijk and Stokhof 1991; Veltman 1996), appear to be especially well-equipped to provide the requisite flexibility in a theoretically motivated way. They may even support a resuscitated version of the thesis that language expresses thought (Charlow 2015). But they are also likely to have radical consequences, both for the analysis of logical machinery in natural language and also potentially for our theoretical understanding of the cognitive states expressed. These are consequences that need to be articulated and assessed in detail. But they are consequencees that many more traditional philosophers, including especially Devitt, are likely to want to resist.

3.3 Universal Grammar and the Psychology of Language Processing

3.3.1 UG-Violating Strings

The final major step in Devitt's argument for the elimination of the language faculty, after establishing that thought has sentential form and that language expresses thought, is the claim that linguistic competence, and hence the language faculty, is no more than "the ability that matches token sounds and thoughts for meaning" (129). Once we shift the entirety of the explanatory burden onto cognition, the argument goes, and accept that language merely transduces the contents and structure of thoughts, there is "little or nothing" left for the language faculty to do; the little work that does remain can be performed by "fairly brute-causal associationist processes."

In §3.1, I rejected the claim that thought itself is universally sentential; and in §3.2 I argued against a monolithic model of language as expressing "beliefs, desires, hopes, and wondering whethers." So we already have significant reasons to doubt that language universally functions to implement, in publically observable form, a structure that is antecedently instantiated by a univocally structured mental state like belief. In this section, I assess the claim that the processes that govern distinctively linguistic processing are merely associationist, with all or most observed constraints on grammatical structure arising at the level of the thoughts expressed.

If UG really constituted the rules of thought itself, this would seem to entail that ordinary people are unable to generate or classify, let alone comprehend, UG-violating strings. However, it appears that we do regularly make sense of UG-violating strings, at a minimum in the course of correcting other speakers' disfluencies. Devitt acknowledges that we can indeed make sense of UG-violating strings, but suggests that we do so, "not by carrying its syntax into our thought but by translating it into a thought with a syntax that is like a sentence in our language" (151) – where this process of 'translation' is presumably also achieved by "fairly brute-causal association."

However, empirical evidence does not support such an 'associationist translation' view of the interpretation of UG-violating strings. Typical humans can learn to construct and classify strings using both UG-conforming and UG-violating rules. Specifically, although they may have difficulty extrapolating UG-violating rules from unstructured data (Smith et al. 1993), they can learn to deploy rules that violate UG because they utilize "rigid" linear distance between words, when those rules are stated explicitly (Musso et al. 2003). At the same time, though, UG-conforming and -violating rules are not on a cognitive par. In particular, they are implemented in distinct neural regions; specifically, the regions within Broca's area that are also activated during ordinary natural language processing are only activated when deploying artificial syntactic rules that conform to UG (Embick et al. 2000; Moro et al. 2001). Indeed, Musso et al. (2003) found that Broca's area progressively *disengaged* as subjects learned the UG-violating grammar, without any other distinctive pattern of brain activity being manifested.

The first, most straightforward implication of these findings for the current discussion is that the overall cognitive abilities of normal subjects can underwrite at least some UG-violating 'thought', in the sense of rule-governed classification, without any translation into or activation of UG-conforming structures. Second, however, the crucial mechanism that does process UG-conforming strings is not part of 'thought' in Devitt's favored sense, of "mental states with meanings." In particular, while some of the relevant experiments contrasted real and artificial rules for languages like Italian and Japanese, others contrasted rules for classifying meaningless symbols as 'agreeing' with respect to patterns involving color and size (Tettamanti et al. 2009). Thus, the distinctive quality that activates the neural areas especially associated with UG seems to be a purely abstract, structural one. More specifically, the crucial feature is whether the rule for 'agreement' among elements is "non-rigid": concerning structural relations among features that are neutral with respect to position, in contrast to "rigid" rules about linear distance between elements. Further, these same neural areas also appear to subserve cognitive processing for other domains that involve the same sort of hierarchical structure, such as music (Patel 2003) and planning complex actions (Koechlin and Jubault 2006).

Devitt might take this last fact, that these neural regions are activated for domains other than language, to support his claim that the relevant structures are processed at a level of 'thought' rather than language, and so that there is "little or nothing to the language faculty" after all. However, the sense in which this holds is at best terminological. Chomsky and colleagues take the "faculty of language" in the

relevant, "narrow" sense ('FLN') to be a mechanism that generates complex internal representations by recursion, and then "pairs sound and meaning" by interfacing with the "sensory-motor" and "conceptual-intentional" systems (Hauser et al. 2002: 1571). The fact that the core mechanism is also utilized for other cognitive purposes does not undermine the existence of biologically innate, distinctively linguistic package of a hierarchical recursive syntax plus phonology and semantics. Further, if that core recursive mechanism is what generates the complex matching structures that are utilized by both the articulatory and conceptual systems, then this mechanism is what implements the mapping from sounds to meanings that Devitt himself calls the 'language faculty' – but in a way that is the very opposite of a "brute-causal associative process."

3.3.2 UG-Conforming Complexities

Classificatory tussling aside, and even ignoring all the varieties of pragmatic and 'peripheral' conventional aspects of meaning cited in §3.2, there remains much more to natural language than the pure recursive operation of predication or Merge. 'Universal Grammar' encompasses all the initial constraints and operations required to derive the full complexities of adult linguistic competence. Devitt is committed to the claim that these linguistic complexities, like the more obviously systematic operations of predication and functional application, are to be explained as manifestations of the "innate structure rules of thought," rather than as arising from language itself. We saw in §3.1 that there are good reasons to doubt that human thought innately has any one universal format. But even if we focus just on the sorts of thoughts that are most plausibly canonically expressed in language – "beliefs, desires, hopes, and wonderings whether" – it is still implausible that those aspects of UG that aren't directly derivable from a Merge-like core operation of hierarchical recursion are 'largely' derived from innate rules of thought alone. Rather, they are more plausibly generated by distinctive features of the structure of natural language.

This is shown first, by various types of constraints on well-formedness that are not plausibly motivated by anything about the thoughts expressed, but that also don't vary in a conventional way across languages. Ludlow (2009) invokes the case of filler-gap constructions to make this point, using the following minimal pair:

(1) Who(m) did John hear that Fred said that Bill hit?
(2) # Who(m) did John hear the story that Bill hit?

(1) is a perfectly well-formed question; and (2) is lexically and structurally highly similar to (1). But while the question that a speaker of (2) might be *trying* to ask is perfectly comprehensible – who was the subject of the Bill-hitting story that John heard – the string itself is irredeemably ill-formed. Explaining the difference between (1) and (2), and the vast range of analogous minimal pairs, has motivated