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# Psychological Reality of Grammars: Devitt's 'Ignorance of Language'

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## Abstract

Devitt makes a sustained critique of Chomskyan linguistics, articulating persistent complaints about the “psychological reality” of generative grammars. I suggest these complaints are merely terminological and that Devitt fails to appreciate the status of Chomsky’s computational formalisms found elsewhere in cognitive science. Devitt ascribes an intentional conception of representations that Chomsky repudiates and that is independently implausible. I argue that Devitt’s proposed alternative “linguistic reality” constituted by physical symbol tokens neglects the problems of tokens as opposed to types and he misses the force of Chomsky’s case against Behaviourism and nominalism. I suggest that Devitt’s case against intuitions as data misunderstands their standard role throughout perceptual psychology. I argue that Devitt’s position exemplifies pervasive errors concerning mental representation seen throughout cognitive science.

**Keywords:** Linguistics; grammar; competence; psychological reality; behaviorism; nominalism; Chomsky; Devitt.

## Rather Idle Controversy

In his recent book *Ignorance of Language*, Michael Devitt (2006b) has mounted an extended, scathing critique of the generative enterprise and compares the situation to quantum physics where there are not only successful explanatory theories but also controversy about foundations. Devitt says in linguistics, by contrast, “There is not a similar controversy about how to “interpret” these theories but I think that there should be.” However, on the contrary, there *has* been just this controversy from the earliest days of generative linguistics, and Devitt is simply rehearsing the most persistent objection to the “psychological reality” of grammars as internal representations (see Quine 1972, Stich 1972, Searle 1980b, Ringen 1975, Botha 1980). By 1978, one philosopher remarked that “More has been written, much of it exasperatingly shallow, about the confusions surrounding the concept of competence and knowledge-as-competence than almost any other topic in recent philosophy” (Nelson 1978, 339).

Devitt’s verdict is a calamitous judgment on Chomsky’s conception of his linguistics:

I urge that linguistics is not part of psychology; that the thesis that linguistic rules are represented in the mind is implausible and unsupported; that speakers are largely ignorant of their language; that speakers’ linguistic

intuitions do not reflect information supplied by the language faculty ... that there is little or nothing to the language faculty ... (2006b, vi)

Devitt’s critique rests on two pillars: his negative arguments against Chomsky’s psychological realism regarding grammars, and his positive case for an alternative conception of a “linguistic reality” that grammars are about. Thus, in part, Devitt’s book depends on attributing a certain doctrine concerning mental representation to Chomsky despite Chomsky’s explicit rejection of it. As an exegetical principle, beyond a certain point, such severe uncharitability is itself a symptom of mistaken attributions and we must ask how such errors of substance and interpretation are possible. Answering this question provides insight into deep and pervasive philosophical puzzles. Devitt’s work may be seen as a case study in what Rorty (1979, 60) has called “the original sin of epistemology” – to model knowing on seeing (1979, 146). In a telling metaphor, Devitt suggests “If we could look into the brain and simply “see” if there were representations of this and that, as we can look in a book and see if there are representations ..., then that would of course settle the matter” (2006b, 51).

A certain “Representational Thesis” (discussed below) is attributed to Chomsky not only in the face of Chomsky’s repudiation, but also despite the familiar merits of his quite different computational conception found elsewhere throughout cognitive science. In this way, Devitt’s rejection of Chomsky’s psychological, computational conception and his own alternative program entails nothing less than undoing the mentalism of the “cognitive revolution” in a return to certain nominalistic aspects of Skinnerian, Bloomfieldian behaviourism – the second pillar of Devitt’s book. Devitt is concerned with what he regards as a “linguistic reality” – the real subject matter of grammars – constituted by the “outputs/products” such as “physical sentence tokens” and “the spoken, written, etc., symbols that speakers produce” (2006a 483). We may recall Chomsky’s (1965) remarks on “this rather idle controversy” being revived by Devitt. In a lengthy footnote to his famous methodological chapter of *Aspects* he wrote:

In fact, the issue of mentalism versus antimentalism in linguistics has to do only with goals and interests, and not with questions of truth or falsity, sense or nonsense. (1965, 193)

Remarkably, it remains apt to characterise Devitt's work in Chomsky's (1967) words forty years ago as "a paradigm example of a futile tendency in modern speculation about language and mind."

For Fodor (1968) the generative approach provided a model for psychological explanation of the sort also articulated in Pylyshyn's (1984) seminal work – namely, the computational view of cognition that "presupposes that we take seriously such distinctions as those between competence and performance." A decade earlier, Pylyshyn (1972, 1973) gave important analyses of the notions of "psychological reality" and competence in psychology in which he explained above all, "One reason why the notion of competence is particularly important is that it is the first clear instance of the influence of ... mathematical imagination on the study of cognition," referring to studies by Turing, Gödel, Church and others in the foundations of mathematics and the theory of computation. Chomsky has referred to his approach in this regard as Galilean and Pylyshyn explains the allusion as reflecting the fact that, like the great advances in physics, "Chomsky's work is permeated with the belief that the secrets of the universe (both physical and psychological) are, as Galileo said, "written in the language of mathematics." The extraordinary persistence of the same disputes suggest that their underlying sources are deep ones that deserve to be diagnosed. I suggest that these misunderstandings are not unique to linguistics but pervasive throughout cognitive science and philosophy of mind since the 17<sup>th</sup> century (Slezak 2006).

### ***Savoir and Connaitre***

Devitt (2006a, b) dubs a certain view of our intuitions about language "Cartesian" – because of the introspective immediacy and certainty such evidence seems to possess. However, the characterisation is perhaps more apt than Devitt intends. Beyond the notion of privileged access to our mental states, Descartes also held views concerning our inaccessible "tacit knowledge" – views that are remarkable anticipations of contemporary conceptions in cognitive science and linguistics. Specifically, in his *Dioptrics* Descartes proposes that in binocular vision the mind determines the distance of an object by means of an implicit triangulation or parallax calculation based on the separation of the eyes and their orientation. Descartes says "this happens by an action of thought which, although it is only a simple act of imagination, nevertheless implicitly contains a reasoning quite similar to that used by surveyors, when, by means of two different stations, they measure inaccessible places." (Descartes 1637/1965, 106) This is, of course, just Chomsky's conception of a competence theory that captures our tacit knowledge – a formal, mathematical, computational model describing what we know unconsciously and underlying our intuition or "simple act of imagination."

Devitt's critique of Chomsky is not only rehearsing objections that have been made and answered repeatedly for several decades recently, but he is also echoing the

incomprehension of Descartes' critics for several centuries. Of specific relevance here is Cecilia Wolf-Devine's (2000) treatment of Descartes' analogy of a blind man holding two sticks whose separation and angle permits him to know the distance of an object. Wolf-Devine takes this account of knowing to invoke a homunculus, despite Descartes' explicit disavowal of such question-begging pseudo-explanations and despite the manifest virtues of the proposed computations on their own. The parallels with Chomsky's critics are noteworthy. Wolf-Devine draws attention to Descartes' use of the verbs *savoir* and *connaître* to suggest that Descartes is guilty of "a hopeless over-intellectualization of perception" (2000a, 513). These complaints are striking to a modern reader familiar with the interminable disputes surrounding Chomsky's use of the words "know" or "cognize" to characterise his generative grammars. We will see that these worries are a constant refrain in the chorus of criticism that Devitt joins.

### **The "Natural" Interpretation of Chomsky**

In seeking to reconstruct Chomsky's views, Devitt chooses to depart from Chomsky's own terminology and to insist upon terms and conceptions that Chomsky has explicitly repudiated, namely the philosophical ideas of intentionality and propositional attitudes. Devitt (2006b, 5) persists in his semantic, intentional sense of 'representation,' indeed, remarkably, illustrating it with the very example of a picture that Chomsky (2003, 276) uses to distinguish it from his own. Devitt characterises Chomsky's view of linguistic knowledge as "propositional knowledge of syntactic rules" (2003b, 108), using the philosophical idiom which entails that *speakers* have access to the *linguists'* theories. Indeed, Devitt (2006b, 69) suggests that Chomsky has made the elementary confusion of a theory and its object. However, for Chomsky, the rules are not the intentional *object* of the speaker's knowledge, but rather *constitute* this knowledge. Chomsky's frequent comparisons with insects and bird-song could hardly make sense on any other interpretation. Aside from the intrinsic implausibility of the idea that naïve speakers might "have propositional knowledge of syntactic facts," Devitt ascribes to Chomsky the very errors he has been careful to warn against. Devitt defends this interpretation of Chomsky as the most "natural" one because it "takes his talk of 'knowing that', 'propositional attitudes', and 'representation' at face value" (2003b, 109). However, what appears as "face value" to a philosopher steeped in scholastic subtleties may not appear as "face value" to cognitive scientists. Thus, the doctrine that Devitt ascribes to Chomsky is characterised as follows: The Representational Thesis (RT): A speaker of a language stands in an unconscious or tacit propositional attitude to the rules or principles of the language, which are represented in her language faculty. (Devitt 2006a, 482, 2006b, 4). Devitt asserts "Many linguists, including Chomsky, seem to believe RT" (2006a, 482) and "The natural interpretation attributes RT to Chomsky" (Devitt 2006b, 7). It is telling that Rey (2003b) uses the same curious expression "the natural

interpretation” as if we are dealing with hermeneutics of the Dead Sea Scrolls and doctrines whose author’s intentions are obscure or unavailable. By any reasonable measure, the *natural* interpretation is clearly the one that Chomsky has repeatedly articulated and insisted upon in specific response to the very construals offered by Devitt and Rey. The only sense in which Devitt’s RT is the “natural” interpretation of Chomsky is one that ignores what he says and appears so to a philosopher enmeshed in irrelevant philosophical notions of intentional representation.

### Simply embodied

For Chomsky, the rules and representations of a grammar are taken to be real in the usual sense applicable in any other scientific inquiry – namely, when they are posits of our best explanatory theory. Devitt says “One is left uncertain of Chomsky’s position” (2006b 71) and, not surprisingly, finds a deep paradox in the fact that Chomsky allegedly “has no worked out opinion about, or even much interest in, *how* that grammar in the head plays a role in language use” (2006b, 71). However, on the contrary, Chomsky has repeatedly (see 1980, 197) suggested plausibly that his abstract, idealized approach is the best way to discover underlying neurological, processing correlates of grammars. Far from lacking interest in the question, Chomsky is simply responding to the obvious fact acknowledged in Devitt’s own words that “we don’t even know enough about what to look for” (2006b 52) or, in Fodor’s words quoted approvingly by Devitt, “there isn’t one, *not one*, instance where it’s known what pattern of neural connectivity realizes a certain cognitive content” (Fodor 1998, 145 quoted in Devitt 2006b, 52). Thus, Chomsky expresses exactly Devitt’s own sentiment, saying “we might go on to suggest actual mechanisms [underlying abstract rules], but we know that it would be pointless to do so in the present stage of our ignorance concerning the functioning of the brain” (Chomsky 1980, 206,7). Nevertheless, Devitt discovers a supposed anomaly in Chomsky’s approach: “What is puzzling about this is that a *strong commitment* to RT seems inappropriate in the absence of a well-supported theory of language use that gives RT a central role” (2006b, 71; emphasis added). That is, Devitt foists a view onto Chomsky that he doesn’t hold and is then mystified by his failure to take it seriously.

### The Birds and the Bees

The decisive evidence of Devitt’s failure to understand Chomsky is Devitt’s own articulation of what he takes to be a possible *alternative* to the “most natural” reading of Chomsky’s words. On this alternative construal, he is taken to hold that language rules are *merely* embodied “without being represented” (2006b, 7, 63; 2003b, 109). However, given Devitt’s stipulation of how “representation” is to be used, this is simply an arbitrary terminological matter of no theoretical interest. Indeed, as we will see, from another point of view Devitt is merely re-stating Chomsky’s own

competence/performance distinction as though he has advanced some novel insight.

Rey accuses Chomsky of inconsistency or insincerity because he sees Chomsky’s (1980a, 102) illustrative examples as essentially involving intentional, referring representations. The difficulty arises in part because, undoubtedly the cases cited do have referential properties, but these are entirely irrelevant to Chomsky’s specific theoretical interest in them. It is as if one were to insist that billiard balls have a colour that is an intrinsic property, even though a Newtonian explanation of their behaviour will not refer to these aspects of the phenomena of interest. Rey (2003b, 158) reports Chomsky’s comparisons with immunology, physics and insect navigation in order to illustrate his notion of representation that is not conceived as intentional in the philosophers’ sense. However, Rey dismisses such illustrations with sarcasm, accusations of disingenuousness, and the evidence of his colleagues’ shared incomprehension (Rey 2003b, 160 fn 19). Not surprisingly, like Devitt, Rey sees an alternative that he considers more plausible than the idea that the ant represents “the system of vector algebra itself.” (2003b. 157). Instead, Rey suggests “That system is, at best, merely implemented somehow in the ant’s nervous system” (2003b 157). However, as we have seen, *terminology aside*, this is not an *alternative* to Chomsky’s conception but precisely his view, since to be implemented in the nervous system *is* to be represented in the relevant sense.

### Devitt’s *Philosophie Als Ob*<sup>1</sup>

Devitt holds that a system might behave “as if” it is following rules but for all that, it might not be governed by represented rules at all. We will see that the entire “debate” might be settled if the term “psychological reality” is ceded to the critics and understood to mean “processing mechanism” since Chomsky’s critics on this issue appear to be almost exclusively motivated by this concern. Devitt’s articulation of his position is striking for its precise recapitulation of Chomsky’s own position under the illusion that an alternative view is being proposed – a point also noted by Laurence (2003, 87). This charge is easy to substantiate, as we can see from Devitt’s statements:

It is not enough to know that there is something-we-know-not-what within a speaker that respects the rules of her language ... We would like to go beyond these minimal claims to discover the ways in which the competence of the speaker ... respect these rules. (2006b, 38)

Chomsky writes:

<sup>1</sup> Hans Vaihinger’s (1911) book *The Philosophy of ‘As If’* argued that we can never know the underlying reality of the world that behaves “as if” it corresponds with our models.

... we are keeping to abstract conditions that unknown mechanisms must meet. We might go on to suggest actual mechanisms, but we know that it would be pointless to do so in the present stage of our ignorance concerning the functioning of the brain. ... If we were able to investigate humans as we study other, defenceless organisms, we might well proceed to inquire into the operative mechanisms ... (1980, 197)

Chomsky's phrase "abstract conditions that unknown mechanisms must meet" is precisely Devitt's much-vaunted "Respect Constraint" and Chomsky's acknowledgment that a grammar might be realized in as yet unknown ways is just Devitt's point about what *he* calls "psychological reality". It should be evident that there is nothing of substance left over besides terminological disagreement between Devitt and Chomsky. Sufficient evidence of the oddity of Devitt's polemic is the fact that, terminology aside, Chomsky's point concerning the competence-performance distinction might well be encapsulated in Devitt's own supposed challenge: "A grammar may have nothing more to do with psychological reality than comes from meeting the Respect Constraint" (2006b, 37).

### "Cognize"

Chomsky (2000, 94) suggests that in its modern guise we can trace the argument about "psychological reality" of grammars back to Quine's distinction between "fitting" and "guiding", the latter term supposedly only appropriate to conscious application of rules. Where rules are not "guiding" and followed consciously in this manner, it is widely held that we may only speak of behaviour "fitting" or conforming with rules in the way that a planet obeys Kepler's Laws. Devitt's main criticism of Chomsky is just an elaboration of this Quinean distinction between "fitting" and "guiding" rules. Clearly, the "debate" has long ago degenerated into a ritual talking past one another. Chomsky and Katz (1974, 363) replied to Stich's (1972, 817) "projectile" argument saying: "At best, it is an open question whether more than an uninteresting issue of terminology is involved."

We may note the irony of Devitt's accusation of a certain "looseness of talk of 'knowledge.'" Devitt says "I think that linguistics would do better to avoid the talk" and "I think that we should drop talk of knowledge from serious science" (2006b, 5). However, it was precisely because of the misleading connotations of the term "know" that Chomsky (1986, 265) himself suggested that it might be replaced with the neologism "cognize."

### Theory and Object

Devitt attributes implausibly naïve errors to Chomsky such as "a certain use/mention sloppiness" and a neglect of the crucial, elementary distinction between a theory and its object. There could be no clearer indication of Devitt's own sloppiness here, for he has failed to appreciate Chomsky's explicit warning about the systematic ambiguity of the term "grammar": In his *Aspects* (1965, 25), the first chapter on

Methodological Preliminaries sets out the key ideas of a competence theory including the following warning. Far from seeming uninterested in the difference between theory and its object, Chomsky made the same clarification in *Language and Mind* (1972), where he noted "The term "grammar" is often used ambiguously to refer both to the internalised system of rules and to the linguist's description of it." (1972, 116). The same point had been explained in Chomsky's (1975, 37) Introduction to his *Logical Structure of Linguistic Theory*. Thus, it should be needless to say that Chomsky does not suggest that the *formalisms* of a grammar themselves are in the head, just as Descartes did not propose that Euclidean theorems are literally inscribed in the brain.

### Marr's Computationalism

Chomsky's grammars illustrate the functionalist conception of mind – the modern statement of what it means to do psychology and to attribute internal representations. Devitt's reservations amount to dissenting not only from Chomsky's views, but from the entire enterprise of modern psychology. Chomsky's functionalist view is unmistakable in his *Aspects* (1965), where he writes:

The mentalist ... need make no assumptions about the possible physiological basis for the mental reality he studies. ... it is the mentalistic studies that will ultimately be of greatest value for the investigation of neurophysiological mechanisms, since they alone are concerned with determining abstractly the properties that such mechanisms must exhibit and the functions they must perform. (Chomsky 1965, 193, fn. 1)

It is particularly surprising that Devitt wishes to deny that linguistics is psychology since accounts of this kind articulate what *constitutes* psychological explanation in the information processing 'paradigm'.<sup>2</sup> Chomsky (1982, 10) has repeatedly cited the work of Marr (1982) as exemplifying this approach, just as Marr (1982, 28), in turn, cites Chomsky's (1965) competence/performance distinction as the appropriate methodological analysis of his computational theory of vision.

### "R - E - S - P - E - C - T: Find out what it means to me" (Aretha Franklin)

Since Devitt refuses to take seriously Chomsky's idealization that abstracts from any possible realization of the rules, not surprisingly, Devitt says "it is hard to see how it [a grammar] could be a theory at the computational level" (2006b, 66). Even where Devitt acknowledges the purely mathematical sense of the notion of "generate" he fails to appreciate the precise force of this conception (2006b, 68). The term "generate" is used in the clear sense in which one says that an axiom system generates its theorems and has nothing whatever to do with actual mechanisms or causal processes. Above all, the formal sense of the term 'generate'

<sup>2</sup> See Chomsky 1966, 91; 1980, 201; 1980, 206,7.

is not “merely metaphorical” in any sense, as Devitt seems to think.

Devitt illustrates his analysis with the case of chess moves which are “rule-governed in that something counts as a chess move at all only if it has a place in the structure defined by the rules of chess” (2006b, 18). Devitt labels these rules “structure rules” in order to distinguish them from “the rules governing the psychological process by which [a player] ... produces chess moves.” Aside from Devitt’s irrelevant characterization of the latter as “interesting,” this analysis simply restates Chomsky’s competence/performance distinction. That is, the first pillar of Devitt’s book – his critique of Chomsky – collapses into a verbal quibble. Devitt seems to appreciate the point in a footnote: “I do not take it [a grammar] to be real simply in virtue of its meeting the Respect Constraint. But this difference may be just verbal.” (2006b, 67). Arguably, this footnote vitiates the rest of Devitt’s book.

### Intuitions

Devitt (2006a, b) devotes special attention to the vexed question of the status of intuitions and suggests that, rather than being “the voice of competence”, linguistic intuitions are “opinions resulting from ordinary empirical investigation, theory-laden in the way all such opinions are” (2006b, 98). Moreover, Devitt argues that “speakers’ intuitions are not the main evidence for linguistic theories” (2006b, 96) and do not support the claims for grammars as mentally represented. However, Lerdahl and Jackendoff (1983) have developed a grammar of music saying: “We believe that our generative theory of music can provide a model of how to construct a competence theory (in Chomsky’s sense)” (1983, xi). In particular, Lerdahl and Jackendoff write: “We take the goal of a theory of music to be a formal description of the musical intuitions of a listener who is experienced in a musical idiom.” (1983, 1) They explain that they are adopting “a stance analogous to that taken in the study of language by the school of generative-transformational grammar” (1983, 5). Music cognition serves to illustrate Chomsky’s point concerning the nature of the enterprise. Since music has no content or reference to the world, these factors need not give rise to the irrelevant intentionalist attribution of RT. Thus, as I. Giblin (2007) has persuasively shown, despite parallel, spurious objections, we may say that a music grammar is internally represented in exactly the same sense as a language – tacit knowledge captured by the rules of a formal generative theory. In particular, we see that Devitt’s “Representational Thesis” is utterly irrelevant in the case of musical cognition. Of course, one could defend something like Devitt’s position by claiming that the formalisms of a generative theory of music were not “psychologically real” and not about a mental reality underlying musical intuitions, but about something else, perhaps a “musical reality” or about the heavenly spheres.

In his efforts to clarify his view, Chomsky (1982, 16) has drawn an analogy with mathematics which, like music, can

be construed in the manner of a grammar representing tacit knowledge of conceptual structures. Indeed, David Gil (1983) has argued that the intuitionist or conceptualist account of mathematics takes intuitions in essentially the same way that a linguist does, namely, as data to be explained by a formal theory

Despite Devitt’s animadversions against intuitions, this form of evidence is commonplace and uncontroversial elsewhere throughout psychology. Nevertheless, Devitt explicitly rejects the analogy of linguistic intuitions with perceptual experience (2006b, 112). However, Devitt’s objection to the analogy is surprising because he draws precisely the wrong conclusion from his own allusion to Fodor’s (1983) account of the visual module. Ironically, Fodor illustrates his point with Ullman’s (1979) algorithmic theory, – exactly the example used by Chomsky (1986, 264) to illustrate the nature of his own computational theory. The perceptual judgments that are relevant in the visual case are emphatically not “*what is seen*” in the “success” sense of such terms, but in the psychological sense of what *seems* to be the case. The distinction is, after all, well known to philosophers (Ryle 1949, 152), though Devitt relies irrelevantly on the veridical or “achievement” conception of “what is seen” (2006b, 114). The visual module doesn’t provide *the truth* about the distal stimulus but only a *perceptual judgment* that Ullman’s algorithm purports to explain, just like Chomsky’s grammar.

The familiar perceptual phenomena that form a large part of the data for the psychology of vision include such things as the various “constancies,” ambiguous figures such as Necker Cube, duck-rabbit and faces-goblet, anomalous figures such as the Penrose Triangle, Kanizsa illusory contours, and the ubiquitous Müller-Lyer Illusion, *inter alia*. The phenomena of interest in all such cases are the percepts of normal viewers – the judgments or construals – that constitute the data to be explained by theories of visual processing. The two interpretations of the Necker Cube known intuitively to a “visual virtuoso” (Hoffman 1998) are closely analogous to the two meanings of an ambiguous sentence known as the percepts of a native speaker. Chomsky writes:

A grammar is a system of rules that generates an infinite class of “potential percepts”, ... In short, we can begin by asking “what is perceived” and move from there to a study of perception. (Chomsky 1972, 168,9)

From such remarks we can see that the place of intuition in grammars hardly deserves to be controversial, unless the whole of perceptual psychology is also open to the difficulties alleged to arise for linguistics. Thus, Chomsky explained the interest of his famous pair ‘John is easy/eager to please’ saying that introspective “data of this sort are simply what constitute the subject matter for linguistic theory. We neglect such data at the cost of destroying the subject” (Chomsky 1964, 79).

## References

- Botha, R. 1980: Methodological Bases of a Progressive Mentalism. *Synthese* 44, 1-112.
- Chomsky, N. 1959: Review of Skinner's Verbal Behavior. *Language*, 35, 1, 26-58; reprinted in L.A. Jakobovits and M. S. Miron (eds) *Readings in the Psychology of Language*. Englewood Cliffs, N.J.: Prentice Hall.
- Chomsky, N. 1964: Current Issues in Linguistic Theory. In *Structure of Language*, J. A. Fodor and J.J. Katz (eds) New York: Prentice-Hall
- Chomsky, N. 1965: *Aspects of the Theory of Syntax*. Cambridge, Mass.: MIT Press.
- Chomsky, N. 1972: *Language and Mind*. New York: Harcourt Brace Jovanovich.
- Chomsky, N. 1975: *The Logical Structure of Linguistic Theory*. New York: Plenum Press.
- Chomsky, N. 1980. *Rules and Representations*, Oxford: Blackwell.
- Chomsky, N. 1986: *Knowledge of Language: Its Nature, Origin and Use*. New York: Praeger.
- Chomsky, N. 2000: *New Horizons in the Study of Language and Mind*. Cambridge, Cambridge University Press.
- Chomsky, N. 2003: Replies. In L.M. Antony and N. Hornstein (eds) *Chomsky and his Critics*. Oxford: Blackwell.
- Chomsky, N. & Katz, J.J. 1974: What the Linguist is Talking About. *Journal of Philosophy*. 71, 12, 347-367.
- Descartes, R. 1637/1965: *Discourse on Method, Optics, Geometry, and Meteorology*. Translated by Paul J. Olscamp. New York: Bobbs-Merrill.
- Devitt, M. 2003: Linguistics is not Psychology. In A. Barber (ed) *Epistemology of Language*. Oxford: Oxford University Press.
- Devitt, M. 2006a: Intuitions in Linguistics. *British Journal for the Philosophy of Science*, 57, 481-513.
- Devitt, M. 2006b: *Ignorance of Language*. Oxford: Oxford University Press.
- Fodor, J.A. 1968. *Psychological Explanation*, New York: Random House.
- Fodor, J.A. 1983: *The Modularity of Mind*. Cambridge, Mass.: MIT Press.
- Fodor, J.A. 1998: *In Critical Condition*. Cambridge, Mass.: MIT Press.
- George, A. (ed) 1989: *Reflections on Chomsky*. Oxford: Basil Blackwell.
- Giblin, I. 2007: *Music and Cognition: Why music is better than its sounds*, doctoral dissertation, University of New South Wales.
- Gil, D. 1983: Intuitionism, Transformational Generative Grammar and Mental Acts. *Studies in History and Philosophy of Science*, 14, 3, 231-254.
- George, A. (ed) 1989): *Reflections on Chomsky*. Oxford: Basil Blackwell.
- Hoffman, D.D. 1998: *Visual Intelligence: How We Create What We See*. New York: Norton and Company.
- Laurence, S. 2003: Is Linguistics a Branch of Psychology? In A. Barber (ed) *Epistemology of Language*. Oxford: Oxford University Press.
- Lerdahl, F. and Jackendoff, R. 1983: *A Generative Theory of Tonal Music*. Cambridge, Mass.: MIT Press.
- Marr, D. 1982: *Vision*. New York: Freeman.
- Nelson, R.J. 1978. Competence-Performance Distinction in Mental Philosophy, *Synthese*, 39, 337-381.
- Pylyshyn, Z. 1972, Competence & Psychological Reality, *American Psychologist*, 546-552.
- Pylyshyn, Z. 1973, The Role of Competence Theories in Cognitive Science, *Journal of Psycholinguistic Research*, 2,1, 21-50.
- Pylyshyn, Z. 1984. *Computation & Cognition*, Cambridge, Mass.: MIT Press.
- Quine, W.V. 1972: Methodological Reflection on Current Linguistic Theory. In D. Davidson & G. Harman (eds), *Semantics of Natural Language*, Dordrecht: D. Reidel.
- Rey, G. 2003a: Chomsky, Intentionality, and a CRTT. In L.M. Antony and N. Hornstein (eds) *Chomsky and his Critics*. Oxford: Blackwell.
- Rey, G. 2003b: Intentional Content and a Chomskian Linguistics. In A. Barber (ed) *Epistemology of Language*. Oxford: Oxford University Press.
- Ringen, J.D. 1975: Linguistic Facts, In D. Cohen and J.R. Wirth (eds) *Testing Linguistic Hypotheses*. Washington, D.C.: Hemisphere Publishing Corporation.
- Rorty, R. 1979: *Philosophy and the Mirror of Nature*. Princeton: Princeton University Press.
- Ryle, G. 1949: *The Concept of Mind*. London: Hutchinson.
- Searle, J. 1980: Rules and Causation: Reply to Chomsky. *Behavioural and Brain Sciences*, 3, 37-38.
- Slezak, P. 2006. Cartesian 'Ideas' and the First (C17<sup>th</sup>) Cognitive Revolution, R. Sun ed., *Proceedings of the 28<sup>th</sup> Conference of Cognitive Science Society*, NJ: Erlbaum, 798-803
- Stich, S. 1972: Grammar, Psychology, and Indeterminacy. *The Journal of Philosophy*, 69, 22, December, 799-818.
- Wolf-Devine, C. 2000a. Descartes' theory of visual spatial perception, in S. Gaukroger, J. Schuster, J. Sutton, eds., (2000) *Descartes' Natural Philosophy*, London: Routledge, 506-523.