The Creative Aspect of Language Use and the Implications for Linguistic Science

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Abstract

The creative aspect of language use provides a set of phenomena that a science of language must explain. It is the "central fact to which any significant linguistic theory must address itself" and thus "a theory of language that neglects this "creative" aspect is of only marginal interest" (Chomsky, 1964, p. 7; p. 8). Therefore, the form and explanatory depth of linguistic science is restricted in accordance with this aspect of language. I discuss the implications of the creative aspect of language use for a scientific theory of language, noting the possible further implications for a science of the mind. I will argue that a corollary of the creative aspect of language use is that a science of language can study the mechanisms that make language use possible, but that such a science cannot explain how these mechanisms enter into human action in the form of language use.

Keywords: creative aspect of language use; linguistic science; science of the mind; externalism; Chomskyan internalism.

1. The Creative Aspect of Language Use

The creative aspect of language use provides a set of phenomena that a science of language must explain. It is indeed the "central fact to which any significant linguistic theory must address itself" and thus "a theory of language that neglects this "creative" aspect is of only marginal interest" (Chomsky, 1964, p. 7; p. 8). As a result, the form and explanatory depth of a science of language will be restricted in accordance with this aspect of language. I will discuss the implications of the creative aspect of language use for a scientific theory of language, noting along the way the possible further implications for a science of the mind. I will argue that a corollary of the creative aspect of language use is that a science of language can study the mechanisms that make language use possible, but for reasons to be explored such a science may be unable to shed light on how these mechanisms enter into free human action in the form of language use.

The creative aspect of language use refers to the kind of linguistic creativity that is displayed in ordinary human linguistic production and comprehension. All humans have the ability to produce and understand an infinite number of novel sentences - sentences that are new in the linguistic experience of the speaker/hearer and perhaps also new in the history of their language. Descartes saw an essential difference between humans and other animals that was most clearly exhibited by our linguistic ability to form new statements, which express new thoughts and are appropriate to but not directly caused by their contexts.

Chomsky (1966) summarises Descartes's views[1] as follows:

[…] it is the diversity of human behaviour, its appropriateness to new situations, and man's capacity to innovate - the creative aspect of language use providing the principal indication of this - that leads Descartes to attribute possession of mind to other humans, since he regards this capacity as beyond the limitations of any imaginable mechanism. Thus [according to Descartes] a fully adequate psychology requires the postulation of a "creative principle" alongside of the "mechanical principle" that suffices to account for all other aspects of the inanimate and animate world and for a significant range of human actions and "passions" as well. (Ibid., p. 53)

The creative aspect of language use thus poses a problem for a science of language because human language, "being free from control by identifiable external stimuli or internal physiological states, can serve as a general instrument of thought and self-expression rather than merely as a communicative device of report, request, or command [as animal communication systems appear to be]" (Ibid., p. 57). In other words, the problem is how to account for the creative aspect of language use in a scientific context when it appears to be a form of free human action. I argue below that the solution to this problem involves accepting that the mechanisms underlying the creative aspect of language use can be a fruitful subject matter for a science of language, but that language use itself may not be. Though before doing so, I discuss in more detail the main issues that Descartes raised in regard to human language use. They are: (1) that it allows for an unbounded expression of thought and (2) it is independent

from direct stimulus control yet at the same time (3) it is appropriate to new situations and coherent in new contexts.

1.1. Unboundedness

Linguistic productivity is the ability to produce and understand an unlimited number of sentences that one has not previously encountered. Descartes viewed productivity in all domains - language, mathematics, vision, etc. - as deriving from a single source. Modern cognitive science has taken a modular approach, insisting that each domain has its own productivity engine (cf. Brattico & Liikkanen, 2009). In order for a grammar to be able to produce from the set of finite primitive elements an infinite set of expressions it must be recursive. The details of the notion of recursion need not concern us here, suffice it to say that it involves embedding a structural object within another instance of itself - as when a noun phrase is embedded within another noun phrase[2]. Non-linguistic examples include the way in which the set of natural numbers is defined recursively, recursion in music[3], or the recursion that is displayed in spatial reasoning and navigation. Fitch et. al. (2005, p. 186) illustrate recursion by asking the reader to consider "such concepts as ((((the hole) in the tree) in the glade) by the stream) and ask whether there is an obvious limit to such embedding of place concepts within place concepts (… in the forest by the plain between the mountains in the north of the island…)."

1.2. Stimulus Freedom

The second issue Descartes raised in regard to the creative aspect of language use relates to the fact that a person's use of language is stimulus-free in the sense that verbal behaviour is "free of identifiable external stimuli or internal physiological states" (Chomsky, 1966, p. 110, fn. 11). That is, "Though our language use is appropriate to situations, it is not controlled by stimulus conditions. Language serves as an instrument for free expression of thought, unbounded in scope, uncontrolled by stimulus conditions though appropriate to situations, available for use in whatever contingencies our thought processes can comprehend" (Chomsky, 1980, p. 222).

One can easily think of examples that show this sort of stimulus freedom. One can speak of elephants when there is nothing in the speaker's environment that could conceivably be called a stimulus that caused the utterances. Or one could speak of Federico Lorca's Poet In New York when the only conceivable stimulus in the speaker's environment is elephants and the African landscape. Under no notion of causality can such utterances be said to have been caused by anything in the speaker's environment. If one does attempt to offer a casual explanation it will not be causality as scientifically construed, but rather the interpretation of a speech event as part of a pattern that can only be identified a posteriori (cf. McGilvray, 2001).

Stimulus-freedom implies not only that language use has no direct causal relation with the environment of the speaker/hearer; Chomsky also argues that there is a sense in which language use has no strict causal relation with internal states either. Thus, he remarks that "Descartes and his followers

observed that the normal use of language is constantly innovative, unbounded, apparently free from control by external stimuli or internal states, coherent and appropriate to situations" (1988, p. 5, my emphasis). Elsewhere, Chomsky refers to a normal feature of everyday usage of language: "the fact that it is typically innovative, guided but not determined by internal state and external conditions, appropriate to circumstances but uncaused, eliciting thoughts that the hearer might have expressed the same way" (Chomsky, 1996, p. 17, my emphasis).

The issue at hand, however, is not the existence of internal or external causes, but rather the viability of including environmental causes or specific internal causes of language use within a scientific theory of language. I argue below that a scientific theory of language cannot be a fruitful and deeply explanatory one if it insists on including such purported causes or correlations with the environment - or, given the proper qualifications, with internal states.

1.3. Coherence and Appropriateness to Circumstance

"The normal use of language", writes Chomsky, "is thus free and undetermined but yet appropriate to situations; and it is recognised as appropriate by other participants in the discourse situations who might have reacted in similar ways and whose thoughts, evoked by this discourse, correspond to those of the speaker" (1988, p. 5). In other words, linguistic "discourse is not a series of random utterances but fits the situation that evokes it but does not cause it" (Ibid.). People assume that the utterances of their interlocutors are relevant, coherent, and appropriate to the circumstance at hand. And even when an utterance fails to do so, we impose an interpretation on it in which it is assumed to be relevant, coherent, and appropriate.

A science of language has to deal with the fact that novel sentences are appropriate to though not determined solely by the circumstances of their use. If in addition to the mechanisms that make language use possible, a theory insists on including within its scope aspects of language use then it must contend with the fact that it is unclear what counts as a relevant or appropriate circumstance[4]. Claiming that a circumstance is that which is judged to be coherent by a speaker/hearer only poses the question to be answered and does not provide any insight. Wilson & Sperber (2004, p. 611), for example, believe that:

The fact that ostensive stimuli create expectations of relevance follows from the definition of an ostensive stimulus and the Cognitive Principle of Relevance. An ostensive stimulus is designed to attract the audience's attention. Given the universal tendency to maximise relevance, an audience will only pay attention to a stimulus that seems relevant enough. By producing an ostensive stimulus, the communicator therefore encourages her audience to presume that it is relevant enough to be worth processing.

However, everyday language use is replete with ambiguities, allusions, metaphors, and many other similar phenomena, and contexts of speech are enormously varied and only tenuously related to particular utterances. It is thus unlikely that one can construct a theory that, say, systematically lists the circumstances to which a particular utterance is supposed to be

appropriate. The reason is that, as Descartes noticed, although expressions are appropriate to circumstances, they are stimulus free and causally unrelated to the speaker's environment. A fortiori, being appropriate cannot be equated with being caused by environmental conditions, for the purported correlation between language and the world is suspect[5]. This is the externalist conception of semantics criticised below.

It is important to stress that the claim is not that correlations do not exist. Rather, the claim is that even though correlations may exist in some form, they are not a fecund subject matter for a serious science of language. One may object that, say, relevance theory in pragmatics or formal semantics do not aim at the rigour, formal structures, or explanatory methods or models of science per se.

However, there are plenty of theorists who explicitly claim that their theory of language is scientific in the sense that it can posit lawful correlations between linguistic behaviour and aspects of the environment and the contexts in which utterances are produced. Paul Horwich (1998; 2005) is a case in point. I discuss below Horwich's claims that his use-based theory of semantics is compatible with a linguistics construed as an empirical science.

To recap, then, the main issues that Descartes raised in regard to the creative aspect of language use are: that language use allows for an unbounded expression of thought and is independent from direct stimulus control, yet at the same time it is appropriate to new situations and coherent in new contexts.

Before detailing the implications that such observations have in regard to a science of language, what follows are some remarks about linguistics and science.

2. Linguistics and Science

For the purposes of this article one can make a distinction between two methods of constructing a scientific theory of language: an externalist approach and an internalist approach. The classic arguments for externalism are found in Putnam (1975), Burge (1979), and Kripke (1980)[6]. The main externalist claim is that mental states are individuated by reference to environmental features or social contexts, and therefore in order for a person to have intentional mental states they must be related to the environment in the right way. Externalism entails that if two individuals are physically identical their respective utterances of, say, water, can still have different meanings if the relevant features of their environment are different.

Externalism has become a widely held position that is especially popular within the philosophies of mind and language. Indeed, some feel that "externalism has been so successful that the primary focus of today's debate is not so much on whether externalism is right or wrong, but rather on what its implications are" (Wikforss, 2008, p. 158), and that "Over the past 30 years much of the philosophical community has become persuaded of the truth of content externalism" (Majors & Sawyer, 2005, p. 257). Externalism has thus become "almost an orthodoxy in the philosophy of mind" (Farkas, 2003, p. 187).

Internalism, on the other hand, holds that, for the purposes of scientific inquiry into language, the internal properties of the human mind are the relevant and fruitful subject matter of scientific research. Internalism (more specifically, Chomskyan internalism) has thus recast the notion of language qua social phenomenon or abstract object into a form that is susceptible to empirical scientific inquiry. Hinzen provides the following succinct definition of Chomskyan internalism:

Internalism is an explanatory strategy that makes the internal structure and constitution of the organism a basis for the investigation of its external function and the ways in which it is embedded in an environment. (2006, p. 139)

Internalism thus studies the internal structure and mechanisms of an organism; the external environment comes into the picture when the internal processes are ascribed content by the theorist, thus explaining how the internal mechanisms constitute a cognitive process in a particular environment. Such content ascriptions vary with the theorist's interests and aims, but the (ascription of) content is not an essential part of the internalist theory itself (cf. Egan, 1995).

I discuss below the scientific claims and merits of externalism and Chomskyan internalism and the consequences that the creative aspect of language use has in regard to each qua scientific theory. I argue that whatever merits externalism may possess and despite its popularity, it is unable to provide a fruitful framework for a scientific theory of language. One might object that externalists do not see their enterprise as scientific and thus it is a moot point to compare it to other scientific pursuits. However, as I show below, there are externalists (Putnam, Davidson, Horwich, Fodor, Burge, et. al.) who explicitly state that their theory is a scientific one. Thus, since both externalists and Chomskyan internalists

claim their theories to be scientific, it is possible and illuminating to compare the two from the perspective of scientific explanatory strategies and to ask which of the two is the most promising avenue in regard to constructing an explanatory scientific theory of language.

In other words, while it is true that externalists discuss their theories in terms of the determination of mental content, this does not preclude assessing their theories from the point of view of explanatory scientific strategy. As is the case with Chomskyan internalists, externalists attempt to explain the phenomena of language production and comprehension, and thus it is valid to assess the success of these explanations and compare them to competing theories that also try to explain the same phenomena. That is, substantive theoretical or philosophical differences are necessarily also ones of explanatory strategy. Since the aim of science is to construct theories that explain and predict phenomena, it is valid for one to compare these two approaches that claim to be scientific from the point of view of explanatory strategies.

2.1. Internalism, Externalism, and Science

Debates about the scientific status of linguistic theories are of course nothing new. Robert Lees's 1957 review of Chomsky (1957) argues that it was one of the first serious attempts at linguistic science "which may be understood in the same sense that a chemical, biological theory is ordinarily understood by experts in those fields" (Lees, 1957, p. 377). Lees is one of the first in a long tradition that has supported the scientific claims of generative linguistics. Recently, John Collins remarked that "the greatest service Chomsky has provided for philosophy is to do philosophy of science via the construction of a new science" (2008, p. 25)[7]. McGilvray argues in regard to the "cognitive aspect of the faculty of language, or the computational system itself" that "there is a serious scientific enterprise devoted to its investigation, and with respect to capturing its structure, at least, there has been considerable progress" (1998, p. 238). Moreover, he says that he is "perfectly happy to say that the various branches of syntax are physical sciences, even if they are sciences of what is in the head, for all that "physical" means is that one has an honest science" (Ibid., p. 243).

Another example is Alec Marantz, who states that mainstream generative linguistics "operates at the nexus of computation, philosophy of language, and cognitive neuroscience" (2005, p. 431). Boeckx & Piattelli-Palmarini write that "The Chomskyan revolution in linguistics in the 1950s in essence turned linguistics into a branch of cognitive science (and ultimately biology) by both changing the linguistic landscape and forcing a radical change in cognitive science to accommodate linguistics […]", and thus they "are persuaded, on solid grounds we think, that in the past 50 years [generative] linguistics has progressively established itself as a genuinely scientific discipline" (2005, p. 447).

How should one assess these claims? What definition or methodology of science can one appeal to in order to argue for or against the scientific status of a theory of language? Lees hints at a key distinguishing factor that can identify good science: an axiomatic system and an overarching explanatory theory. He compares Chomsky's approach to studying language to the

development of chemistry: it was only after Lavoisier's work in the late eighteenth century that chemistry developed from its beginnings in alchemy to a scientific discipline.

Lavoisier's work allowed chemistry to achieve its scientific status by pushing the discipline to concern itself not so much with the correctness of its postulates - though that is of course essential - but with explanatory theory construction.

The postulation of an overarching explanatory theory and an accompanying axiomatic system, though necessary, is not sufficient to distinguish a fecund and deeply explanatory science from one that is not. Chomskyan internalism proposes an explanatory theory, but, arguably, so does externalism: Putnam remarks that "a better philosophy and a better science of language" must encompass the "social dimension of cognition" and the "contribution of the environment, other people, and the world" to semantics (Putnam, 1975, p. 193, my emphasis). Horwich (2001, p. 371) argues that Davidson's externalist truth-theoretic program "became widely accepted, instigating several decades of "normal science" in semantics." Davidson himself is somewhat ambivalent, but still holds that "my own approach to the description, analysis (in a rough sense), and explanation of thought, language, and action has […] what I take to be some of the characteristics of a science" (1995, p. 123). Burge (2003, p. 465) remarks that he sees no reason why formal semantics, which postulates "reference, or a technical analogue, as a relation between linguistic representations and real aspects of the world, should not be an area of fruitful systematic scientific investigation."

So apart from the construction of a self-consistent explanatory theory, which both externalism and internalism arguably have, what can distinguish the two in regard to their scientific credentials? I propose that the distinguishing criterion should be the subject matter of their theories. It is not enough to have an explanatorily self-consistent theory: your theory must also explain a scientifically tractable aspect of the world. In other words, if your theory fails to divide nature at the joints, then no improvement of its methodology or its explanations will matter. Moreover, observations of the creative aspect of language use imply that if one takes language use as the subject matter of one's theory, as externalists do, then such a theory is unlikely to yield a deeply explanatory science. Before I offer an argument for this, a few remarks of clarification are in order.

2.2. Internalism versus Individualism

Putnam constructs various thought experiments to argue for the externalist claim that the individuation of meanings is impossible if one only considers thinkers in isolation, and thus a semantic theory must consider the person's interaction with the environment and with other language users. The Twin Earth thought experiment is the most famous, but there are others that make the same point. One of which concerns the difference between an elm tree and a beech tree. Putnam claims to have the same concept for both elm trees and beech trees because, unlike botanists, he cannot tell them apart. But Putnam claims that "elm" and "beech" nevertheless have different meanings when he utters them. This is so even though, ex hypothesi, his

mind-internal phenomena are identical whenever he utters “elm” or “beech”. Therefore, according to Putnam, considering the mind-external environment - the expert botanists, in this case - is the only way to discern the meaning of his utterance of “elm” or “beech”. He argues that one’s “individual psychological state certainly does not fix its extension; it is only the sociolinguistic state of the collective linguistic body to which the speaker belongs that fixes the extension” (1975, p. 146, emphasis in original).

It is hard to argue with such a claim; of course one can only discern what a person’s utterance refers to by consulting the external environment. In order to determine the extension of Putnam’s utterance of either “elm” or “beech” one must consult not only Putnam’s mind-internal states and knowledge but also the knowledge of an expert who can distinguish between an elm and a beech, as well as the environment in which the utterance was produced. Be that as it may, however, the question arises as to the relation between such a search for individuation conditions and a science of language. That is, what is the relation, if any, between the search for the conditions under which one is justified in ascribing a particular meaning to an utterance, and a science of language that seeks to explain how linguistic utterances are produced and comprehended? I argue that studying the mechanisms in the mind by which meaning is made possible is one enterprise, the ascription of meaning to particular utterances another[8].

Millikan (2004, p. 227) concurs when she says in regard to Putnam’s argument that if “we explain the externalist idea in this crude way […] it becomes hard to see how anyone could deny it.” That is, “If the question were, merely, how are the referents or extensions of thoughts determined, it seems patently obvious that nothing inside someone’s head could, by itself, determine that anything in particular existed outside the head.” Millikan says that externalism so defined should not be so obviously true, but instead of turning against externalism she clings to it. But her remedy does not help and in fact complicates the matter further. Her externalist theory defines “inner representations by the way they function, not just in the head, but as parts of much larger systems that include portions of the environment” (Ibid., p. 229). The functions of the inner representations, on Millikan’s account, were selected by natural selection in the course of the organism interacting with its environment in a “Normal” way. Thus, it is “this reference to a certain kind of history of selection and/or development that adds the radically externalist twist to this theory of mental representation” (Ibid.).

Millikan believes that mental representations can only be individuated by reference to their function, and thus she argues that we must adopt an externalist and evolutionary stance to individuation because “What a thing was designed to do is not always evident just from its inner function, even from its inner function plus the structure of its current environment” (Ibid.)[9] She remarks that “whether an inner happening or structure is a representation is not merely a matter of its inner structure.” But the question again arises as to whether this claim is relevant to scientific theories of meaning or mental representations that attempt to discover the mechanisms by which language production and comprehension are possible? Externalists

claim that the criteria of the ascription of meaning or of function belong in a scientific theory of language, but I argue below that this will not yield a fruitful science.

As a final remark, it should be noted that Chomskyan internalism is compatible with the view that the individuation of meanings is impossible without considering the environmental context of an utterance. If the aim of your theory is to discover the conditions under which an outside observer can make a correct judgement as to the meaning of a specific utterance (relative to the way the meaning is used within the linguistic community of the speaker), then of course such a theory must include within its domain the environment outside the head. But such a claim has little to do with a scientific theory of meaning. The externalist claim that it does follows from their glossing over an important distinction between the theory itself and the way in which the theorist uses and interprets the theory to achieve certain explanatory goals (cf. Egan, 1995; 1999; 2003). This ambiguity is evident in remarks such as Ben-Menahem's (2005), who notes in regard to one of Putnam's examples that "to speak of coffee tables it does not suffice for us merely to have the concept of a coffee table, but we must be in contact with actual coffee tables" (p. 10, emphasis in original). In other words, there's an ambiguity between a theory that explains our ability to have the concept of, say, a coffee table, and a theory that purports to explain how it is that we use this concept to talk about actual coffee tables. Or, more generally, the difference is between a theory of the mechanisms in virtue of which language production and comprehension is made possible, and a theory of the use of those mechanisms in, say, social interaction. When externalists claim that a science of language must encompass the social dimension of linguistic behaviour, it is not clear whether the claim is that this aspect of linguistic behaviour must be included within the scope of the theory itself, or whether this aspect can be connected to the theory by what Egan calls the theory's interpretation function. This distinction is important, for failure to adhere to it results in a defective explanatory theory.

3. Can Externalism Form the Basis of a Science of Language?

Let us now look at an externalist theory of language in detail in order to assess whether it can form the basis of a fecund and explanatory scientific theory of language.

3.1. Horwich's Use-Theory of Meaning

Horwich (2005; 2008; 2010) claims that his use-based semantics is compatible with a linguistics construed as an empirical science. I give a brief sketch of his theory - by contrasting it with truth-theoretic semantics - and then argue that the reasons for doubting Horwich's scientific claims are the same as the reasons for rejecting externalist theories of meaning in general as candidates for scientific theories of language.

Horwich (2008) is a critique of mainstream formal semantics in which he argues that there is no reason to think that language has a truth theoretic basis. He claims that while the problems truth-theoretic semantics presents "are highly challenging, requiring considerable skill and ingenuity, and that enormous progress has been made in these endeavours over the last forty years or so", citing such progress "is not enough to vindicate truth-theoretic semantics as an empirical subject, as an integral part of the global scientific enterprise" (p. 318, fn. 12, emphasis in original). He argues that in order to be scientific, truth-theoretic semanticists must show how their derivations have contributed to the explanation of observable events. However, "that has not, and cannot, be done" (Ibid.).

Horwich's main objection to truth-theoretic semantics has to do with compositionality and the assumption of formal semanticists that the focus of semantics should be sentence meanings. Davidson's truth-theoretic approach, for example, involves a compositional theory of meaning in which the meanings of sentences depend on the meanings of their constituent words. Horwich takes the opposite approach, for he believes that compositionality is relatively easy to accommodate and thus one needs to first identify the meanings of words and then "presupposing compositionality, to trivially deduce the theoreticalmeanings of sentences" (Ibid., p. 314).

Inverting the focus of semantics from sentences to words has the deflationary effect of nullifying truth-theoretic semantics because truth conditions apply to sentences and not to words. Given this focus on words, Horwich suggests that the theoretical characterisation of word meanings should be deduced not from sentence meaning but from sentence usage. And so his alternative is an externalist semantic theory that rejects truth conditions in favour of the claim that "the underlying basis of each word's meaning is the (idealized) law governing its usage - a law that dictates the "acceptance conditions" of certain specified sentences containing it" (Horwich, 2005, p. 26). This law of acceptance conditions purportedly solves the puzzle of why it is that, say, "The sky is blue" tends to be recognised as true.

Horwich believes that the phenomena that semantics needs to explain are those of sentence acceptance. He elaborates: "I don't mean "accepted as

grammatical", but "accepted as true", i.e., "in the belief-box"." Moreover, acceptance "sometimes leads to utterance (depending on the speaker's desires); therefore explaining the acceptance of a sentence may contribute to explaining its being uttered" (2008, p. 315, fn. 9, emphasis in original). According to Horwich, there are scientific laws that govern sentence acceptance. Given such laws, "it will be relatively easy to see how word-meanings, alongside other factors, will be capable of explaining what needs to be explained (namely, the acceptance-status of all sentences containing it)" (Ibid., p. 318, emphasis in original). And so insofar as linguistics is an empirical science, says Horwich, "standing alongside psychology, neurology, biology, physics, etc.", such acceptance-laws "should be testable against concrete observable events" (Ibid., p. 315). Thus, "the semanticist of a given language ought to be looking, concerning each word, for the basic law governing its use" (Ibid., p. 319), and if such laws are forthcoming and explanatorily fruitful, Horwich believes that "Semantics would then somewhat resemble fundamental physics" (Ibid., p. 318). In other words, the claim is that there are law-like regularities of word use, which are purportedly "characterised in non-semantic, non-normative terms" - that is, in naturalistic, scientific terms. These regularities are then used to derive facts about which rules of language use people implicitly follow. These regularities and rules, then, "suffice to fix what we mean by our words and hence sentences" (Horwich, 2010, p. 113, emphasis in original).

3.2. Problems with Use-Theories of Meaning

Horwich writes that if "a semantic theory explains the phenomena of sentenceacceptance - and if it coheres with theories of phonology, syntax, and pragmatics to yield a science that explains all the phenomena of linguistic activity - then it is a good theory" (2008, p. 319). He argues that truth-theoretic semantics cannot yield such a science but that his use-based semantics can. However, since both are externalist theories that claim to find scientifically tractable regularities in language production, and due to the creative aspect of language use, I argue that they cannot yield a fruitful and explanatory science of language.

As noted above, Horwich believes that "the underlying basis of each word's meaning is the (idealized) law governing its usage" (2005, p. 26). He claims that in order to make linguistics an empirical science semanticists need to look for the basic laws governing the use of words, but this assumes that there are scientifically interesting regularities in language use; and that is far from obvious. Moreover, the phenomenon of, say, a particular word's usage, is merely the effect of the internal psychological mechanisms of language. The regularities of language use, such as they are, do not explain anything but rather are what needs to be explained. Cummins (2010) talks of the "scandal" of the widely held belief that scientific explanation is subsumption under law: "Laws tell us what the mind does, not how it does it. We want to know how the mind works, not just what it does" (Ibid., p. 140). It is the capacity for language use that science seeks to explain, and laws of word use that Horwich postulates are at best the effects of this capacity. The laws describe the data to be explained, and the explanation involves the mechanisms in virtue of which language use is made possible.

In fact, most scientific explanation in general follows what Thagard (2012) calls the mechanista view of scientific method, which holds that to explain a phenomenon is to describe a mechanism that produces it. Thus, in order to be an explanatory theory, use-based semantics needs not only laws of word use, the existence of which is tenuous at best, but also the mechanisms in virtue of which word use is made possible.

More specifically, sentence acceptance, a main tenet of Horwich's theory, is deeply problematic, and it is unclear whether it can be generalised beyond the examples that Horwich gives (cf. Schiffer, 2000). But even if the notion of sentence acceptance can be spelled out, use theories of meaning, as Gupta (2003)[10] remarks, rest "on an unacceptable identification: an identification of principles that are fundamental to an explanation of the acceptance of sentences with principles that are fundamental to meaning" (p. 654). That is, sentence acceptance may overlap to some extent with sentence meaning, but they are not the same thing. Gupta argues that there is little reason to think that explanatorily basic patterns of sentence acceptance in Horwich's theory can provide the meaning of a word. This is because "the acceptance of sentences depends not just on the meanings of words but also on the methods of obtaining information (and misinformation) about the world" (Ibid., p. 666).

3.3. Problems with Externalist Theories in General

Whatever the details of use theories of meaning and their idiosyncratic difficulties, they are still externalist theories and thus face the same general problems as all externalist theories.

The fact that sentence acceptance depends not just on the meanings of words but also on the methods of obtaining information about the world hints at the main reason for the inability of externalist theories such as Horwich's to serve as scientific theories of language: the problem is the subject matter and scope of the theories. The reason is the same reason given by Katz & Fodor (1963, p. 179) fifty years ago. They ask the reader to compare the following three sentences:

Should we take junior back to the zoo? Should we take the lion back to the zoo? Should we take the bus back to the zoo? They then remark that, for example, "Information which figures in the choice of the correct readings for these sentences includes the fact that lions, but not children and busses, are often kept in cages." After listing a handful of other examples, they note that the "reader will find it an easy matter to construct an ambiguous sentence whose resolution requires the representation of practically any item of information about the world he chooses." Thus, a linguistic theory that takes it upon itself to resolve such ambiguities clearly must include within its scope every feature of the world that speakers may need in order to arrive at the correct reading of an ambiguous utterance. But practically any piece of information about the world is potentially relevant. Further problems arise when theorists investigate the truth of an utterance in relation to the mind-external world.

A theory that includes language use and the mind's relations to the world within its explanatory scope cannot hope to find reliable relations of this sort - let alone systematise them into a fruitful explanatory scientific theory.

This is due to the creative aspect of language use: if language use is indeed uncaused in the above sense, but is at the same time coherent and appropriate to the circumstances at hand, then there will be no scientifically interesting regularities of the sort Horwich and other externalists claim to exist. This is in addition to the fact that even if there were such regularities, they would merely be a rewording of the phenomena to be explained.

Another problem is that meaning is defined in externalist theories in a way that makes them unable to distinguish between the speaker's linguistic knowledge and their world knowledge. In Putnam's example of elms and beeches, the theorist must consult not only the mind-internal mechanisms of the speaker but also their, and other speakers', world knowledge. To really know whether Putnam's utterance means "elm" or "beech" the theorist must, according to externalism, (1) consult Putnam's linguistic knowledge, (2) his world knowledge about elms and beeches (and whether he can tell them apart), and (3) the world knowledge of other speakers (the expert botanists who can tell the difference between elms and beeches). Clearly, then, externalists demand that a theory of linguistic meaning include within its scope not only the internal linguistic mechanisms of the speaker, but also the world knowledge of the speaker and the relation that holds between the speaker's utterance and the world. But if all of the aforementioned must be included in the same theory, then externalism cannot in principle distinguish between linguistic knowledge and world knowledge (cf. Haiman, 1980).

In other words, a linguistic ability is couched by externalists in terms of representations of all the knowledge about the world that speakers share. However, as Katz & Fodor remark, "since there is no serious possibility of systematizing all the knowledge of the world that speakers share, and since a theory of the kind we have been discussing requires such a systematization, it is ipso facto not a serious model for semantics" (1963, p. 179)[11]. The same holds for all externalist theories of meaning: they are not a serious model for scientific theories of meaning because their subject matter is too wide in scope. In other words, if the creative aspect of language use is the subject matter of your theories, and if Descartes was right to point out the uncaused yet appropriate nature of language use, then externalist theories of language use will not yield a fruitful and explanatory science. As outlined in the next section, however, a scientific theory of the mechanisms that underlie language use is possible.

4. The Internalist Explanation of the Creative Aspect of Language Use

I argue below that the Chomskyan internalist approach to linguistic science avoids the pitfalls of externalist theories of language and thus provides a promising candidate for an explanatory and fecund linguistic science.

The subject matter of generative linguistics is taken to be linguistic competence, the speaker-hearer's knowledge of their language, as opposed to linguistic performance, which is the actual use of this knowledge in language production and comprehension. This distinction forms the foundation of generative linguistics and Chomskyan internalism. The actual use of the knowledge of one's language involves many other factors and phenomena, only one of which is one's competence. It is only under strict idealisation conditions that performance might be seen as reflecting competence, and the actual causal sequence that brings about a speech act is not directly related to competence.

Another distinction is that between I-language and E-language (Chomsky, 1986). Externalised (E-) language refers to actual speech events, with some account of their context of use. From the E-language point of view, then, a grammar is a collection of statements that describe linguistic performance. Moreover, on this account there need not be one "real" or "correct" grammar that corresponds to the corpus data: as long as it yields a correct description of the corpus data, any number of grammars could in principle apply[12]. David Lewis, for example, says that he can find no way to "make objective sense of the assertion that a grammar G is used by population P whereas another grammar G` which generates the same language as G, is not" (1975, p. 177). Lewis believes that a language is an abstract, formal system that a population selects by convention (cf. Lewis, 1969). Similarly, Dretske (1997) claims that "everything we in fact call a language, at least a natural language, is the product of social factors" (p. 289). Another manifestation of E-language can be seen in Devitt & Sterelny (1989), who argue that rather than being about competence, linguistics is about the properties and relations of observable, external, linguistic symbols (cf. Devitt, 2006).

According to the E-language conception, then, language is, as it were, "out there", it is not intimately related to the mind. A case in point is Deacon (1997), who is critical of the Chomskyan approach to studying language acquisition, and says:

They [Chomskyans] assert that the source for prior support for language acquisition must originate from inside the brain, on the unstated assumption that there is no other possible source. But there is another alternative: that the extra support for language learning is vested neither in the brain of the child nor in the brains of parents or teachers, but outside brains, in language itself. (p. 105, emphasis in original, my emphasis) [13]

On the internalised (I-) language perspective, however, language is conceived as being intimately related with the mind in that there is some structure in the mind of the speaker/hearer that is responsible for their language. So, unlike the Elanguage conception of grammar, the grammar

qua I-language is a theory of a real mental structure to which "questions of truth and falsity arise […] as they do for any scientific theory" (Chomsky, 1986, p. 22). An I-language is a generative procedure in the mind of a speaker/hearer that creates a structural description that combines phonetic, semantic, and structural properties.

The Chomskyan internalist claim is that the proper subject matter of a scientific linguistics should be the knowledge a speaker/hearer has of their language, the knowledge (a structure in the mind/brain) that underlies and makes possible, along with other factors, the speaker/hearer's language production and comprehension.

4.1. Semantics and Chomskyan Internalism

In the Chomskyan internalist approach to semantics, the language faculty derives an expression Exp by assembling features from the array of lexical items and mapping them to the Phon and Sem representations (i.e., Exp = <Phon, Sem>). The semantic features of an expression (Sem) are mental instructions that interface with, and thus give information to, the conceptual-intentional systems. Sem is the interface between the language faculty and the systems of thought. This approach mirrors the approach to phonology in which phonetic features of an expression (Phon) are mental instructions that interface with, and thus give information to, the sensorimotor systems. The arrays of semantic features that are part of Sem are, as many have repeatedly noted, much more complex and difficult to investigate than the phonological representations. Nevertheless, valuable and fruitful progress has been made in regard to semantic features.

Pietroski (2006) compares linguistic meanings in Chomskyan internalism to blueprints, which are produced by the language faculty for constructing concepts from lexicalised elements. At a higher level is the I-language, which is a biologically-instantiated procedure that pairs phonological instructions with semantic instructions; other systems then execute these instructions. Sems are thus not to be thought of as concepts, for construing them as concepts "may be a category mistake, like evaluating an instruction to fetch a rabbit as male or female" (Pietroski, 2010, p. 252, emphasis in original). In other words, what we have are instructions to build concepts, which provide the inputs to other systems that enter into various human actions, one of which is communication. Chomskyan internalist semantics, then, concerns the nature of the instructions given by the language faculty to the systems of thought; it concerns not the concepts themselves but the instructions to fetch, build, and combine concepts. In other words, it concerns the mechanisms of concept creation (cf. Pietroski, 2008).

This is of course one step removed from what externalist semantics studies, which is the concepts themselves, their role in language use, their relation to the speaker's environment, and their truth values. As Pietroski remarks, the work of a Chomskyan internalist "will take the form of saying how meaningful Iexpressions can be used to build concepts that are inputs to a more complex process of building concepts that we can use to make truth-evaluable judgements" (2010, p. 272, emphasis in original).

Externalist theories that include within their scope the relation of, say, concepts to the world, run into overwhelming problems, some of which I

discussed above. Whereas Chomskyan internalist theories study the mechanisms in virtue of which concept construction and language use is made possible: these are expressions produced by an internal linguistic engine whose components have no direct relation to the outside world. The Sem features are used to construct concepts that are then used by other systems to make truth-evaluable assertions, or communicate an idea, or any number of uses to which language can be put.

The current abstract form of the Sem features will of course be refined until the theoretical vocabulary of a serious science of meaning emerges. But they are a good starting point, for they help recast the notion of linguistic meaning into a form that is susceptible to scientific investigation. The instructions at the Sem interface that are interpreted by the performance systems are used in the act of talking and thinking about the world. And so, on this view of meaning, the instructions to create concepts play the role of "focus[ing] attention on selected aspects of the world as it is taken to be by other cognitive systems, and provide intricate and highly specialised perspectives from which to view them, crucially involving human interests and concerns even in the simplest cases" (Chomsky, 2000, p. 125).

In summary, then, Chomskyan internalism postulates a mind/braininternal generative procedure (an I-language) that generates expressions of the form Exp = <Phon, Sem>. This expression (via the Phon and Sem interfaces) is then used by systems outside of the language faculty (but internal to the mind/brain) in language production and comprehension. Chomskyan internalism argues that what is relevant to and tractable by a scientific theory of language is the mechanisms operating within the mind/brain, thus avoiding the problematic aspects of externalist theories discussed above. This of course does not mean that the mind is completely detached from the outside environment (it's not), nor does it mean that one must individuate meanings by making use of only individualistic or organism-internal vocabulary (for there is the distinction between the computational theory itself and its interpretation by the theorist). Rather, the upshot of Chomskyan internalism is that whatever connection the mind has with the outside world, that connection is unlikely to be within the scope of a scientific theory of language.

5. Concluding Remarks

The argument against externalist theories of language qua scientific theories that appeals to the creative aspect of language use is as follows: since language use allows for an unbounded expression of thought and is independent from direct stimulus control but at the same time it is appropriate to new situations and is coherent in new contexts, an externalist scientific theory of language use is not viable. People can produce and comprehend an infinite number of novel utterances, and it is problematic at best to try to account for their linguistic behaviour directly: no scientifically interesting lawful correlations or predictions of potential linguistic behaviour will be found.

This of course does not mean that the mechanisms that make language use possible cannot be studied, but it does mean that the creative aspect of

language use will perhaps remain, as Chomsky puts it, not merely a problem but a mystery[14]. One possibility of dispelling the mystery, still as remote today to pursue seriously as it was when Descartes suggested it, is to postulate a "thinking substance", a new aspect of mind. As Bracken (1970a) explains, the Cartesians saw no way of extending their physical explanations to cover mental phenomena, and so it was suggested that a new principle, the "creative" principle, must be added to the vocabulary of science. This is on the analogy of the postulation of the then new principle of gravity: the occult qualities of gravity were methodologically objectionable to both the Cartesians and to Newton but they accepted it "largely because the powerful mathematical model Newtown employed carried against all a priori objections" (Ibid., p. 237).

The explanatory success of theories of mind is of course far smaller than that of Newtown's theory of gravity, but it is worth remembering that even Newton regarded the postulation of gravity as "inconceivable" and "so great an absurdity that […] no man who has in philosophical matters any competent faculty of thinking can ever fall into it"[15]. But scientists were eventually forced to accept it due to its mathematical and explanatory power, for gravity gave an account of the essence of matter. The Cartesians, especially as their ideas developed with the Port-Royal tradition, attempted to do the same to the mind. That is, "in grammar we can derive an account of the essence of mind parallel to the account which geometry gives us of the essence of matter" (Bracken, 1983, p. 22). The Cartesians had no model by which to explain the essence of mind that was equivalent to Newton's postulation of gravity as the essence of matter, and that is what the Port-Royal tradition attempted to provide. Today, Chomsky sees generative linguistics as reviving the Port-Royal efforts to provide a mathematical model of the mind that would take some steps towards an account of the essence of mind, but now with a more restricted subject matter and armed with modern mathematical tools such as those provided by Alan Turing and others (cf. Bracken, 1970a, b, 1983).

To recap, then, externalist theories of language are concerned with normative and epistemic notions such as truth and reference, and these notions are clearly aspects of language use. But if Descartes and Chomsky are right to argue that the creative aspect of language use is now - and perhaps to remain - beyond the scope of scientific explanations then an externalist theory of language that is an explanatorily fruitful scientific theory is impossible. As McGilvray (2005) puts it: "Because people use words for all sorts of purposes, because the use of language is a form of free action, and because there is little reason to think that there can be a science of free action, there is little reason to think that there can be a naturalistic externalist theory of meaning" (p. 204).

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Notes

1 . 1 Cf. Bracken (1983), D'Agostino (1984), and Den Ouden (1975). Cf. Schouls (2000) for detailed discussion of Descartes' views on the nature and possibility of science.

2 . For more on recursion, cf. Parker (2006), Tomalin (2007), and Zwart (2011).

3. 3 Cf. Jackendoff & Lerdhal (2006).

4. Cf., for example, Giora (1997).

5. Cf. McGilvray (2001).

6. See also Burge (1986), Davidson (1987), and McGinn (1989). Wikforss (2008) is an excellent overview and discussion of externalism. It should be noted, however, that even though the umbrella term "externalism" applies to them all, these citations of externalists should not be taken to imply that they all necessarily have similar arguments or that they are in agreement with one another.

7. Cf. Collins (2006).

8. Cf. Devitt (1984, p. 385): "thoughts are one thing, their ascription another [… it is a mistake for philosophers to] start with the theory of thought ascription, leaving the theory of thought pretty much to look after itself".

9. Cf. Millikan (1984; 1993; 2004a).

10. Cf. also Gupta (1993).

11. It is worth noting that, as I have argued elsewhere, Fodor appears to have changed his mind about what a serious model of semantics entails. Since at least the 1980s he has argued in favour of an externalist semantics. Cf. Asoulin (2012).

12. Cf. Quine (1972) and Lewis (1975), both of whom Chomsky (1986) cites as indicative of the E-language approach. For other E-language approaches see Devitt & Sterelny (1987; 1989), Devitt (2006), and Wallace (1977). See also Millikan 'In Defence of Public Language' and Chomsky's reply in Millikan (2003).

13. Cf. Chomsky (2000, p. 22) for discussion of Deacon's view.

14. Cf., amongst many others, Chomsky (1982, p. 429).

15. Quoted in Chomsky (1993, p. 38).

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