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The Foundation Walls that are Carried by the House: A Critique of the Poverty of Stimulus Thesis and a Wittgensteinian–Dennettian Alternative

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A bedrock assumption made by cognitivist philosophers such as Noam Chomsky, and, more recently, Jerry Fodor and Steven Pinker is that the contexts within which children acquire a language inevitably exhibit a irremediable poverty of whatever stimuli are necessary to condition such acquisition and development. They argue that given this poverty, the basic rudiments of language must be innate; the task of the cognitivist is to theorize universal grammars, languages of thought, or language instincts (respectively) to account for it. My argument, however, is that this assumption is philosophically suspect in that it assumes an untenably Cartesian conception of "stimulus" which itself presupposes a rigid dualism of subject-user and context and hence confuses the *underdetermination* of stimulus for its lack. I argue that the former does in fact provide the necessary conditions for language acquisition. I then go on to develop a Wittgensteinian–Dennettian model within which underdetermination plays a key role.

In a recent *Scientific American* article entitled "A Sign is Born," John Horgan (1995, pp. 18–19) profiles a kind of ready-made language laboratory for the study of the emergence of a sign language. The story begins in early 1980's Nicaragua with the Sandinista Party's program to integrate deaf children into classes designed for hearing children in the public schools of Managua. Due in large measure to the inability of teachers to conduct classes in any known sign language for the deaf (such as American Sign Language) the schools became the locus for the emergence and development of a system of rudimentary signs. Horgan describes how a relatively primitive system consisting of a handful of signs called *Lenguaje de Signos Nicaraguense* began to develop and then later evolved through successive generations of signing children into a more sophisticated language called *Idioma de Signos*.

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According to Horgan, "[t]he experiment provides powerful corroboration of a thesis first put forth in the 1950's by linguist Noam Chomsky that . . . [l]anguage is an innate human trait . . . that manifests itself in spite of what seems to be insufficient input or 'poverty of stimulus'" (1995, pp. 18–19). That is, while linguists acknowledge that "for language to flourish, the exposure to linguistic stimuli must exceed some minimal threshold" the relatively impoverished linguistic conditions of the original signing children who developed *Lenguaje de Signos* show how the rudiments of language are themselves innate (1995, p. 19).

Since the 1950's the poverty of stimulus thesis has become enshrined as one of the bedrock assumptions of cognitivist philosophers like Chomsky, and more recently Jerry Fodor and Steven Pinker, who theorize elaborate cognitive structures, "universal grammars," "languages of thought," or "language instincts" to account for language's apparent innateness. A principal aim of this essay, however, is to show that this thesis rests on a conception of "stimulus" which confuses the underdetermination of stimulus in any particular context with a lack or poverty of stimulus generalizable to all. I will argue that (1) cognitivists who rely on the poverty of stimulus must presuppose a subtle but unmistakably Cartesian conceptual framework within which the context and subject-users of language continue to be conceived in a manner consistent with the mind/body dualism they reject, and that (2) acceptance of this framework (tacitly or explicitly) reinforces the apparent validity of the thesis, which (3) discourages serious consideration of alternative accounts of language grounded in the empirical sciences (especially neurophysiology, primatology, biology, and evolution). In short, while cognitivists disavow mind/body dualism, they nonetheless import a version of it into the way they conceive the subjects and contexts of language. Perhaps Chomsky is correct, that is, embracing some form of Cartesianism is justifiable. This, however, must be shown, a task which, I suggest, leads inevitably to a reevaluation of bedrock concepts like those upon which the poverty of stimulus rests, and to a more serious look at non-Cartesian alternatives.

The second aim of this essay is to offer a sketch of one such alternative. Drawing upon the work of Ludwig Wittgenstein, Judith Genova, and Daniel Dennett, I will argue for a conceptual and investigative framework within which language users are conceived in terms of the complex psychological and epistemic situations they occupy within specific contexts. Within this framework, language is not conceived as determined by any innate cognitive structure, but rather as the product, instrument, and reflection of the evolving and myriad *relationships* among language users and their contexts.[1] On

[1]I have also explored this and related themes from a Wittgensteinian feminist perspective: see Wendy Lee–Lampshire, 1992 and 1999 (in press).

this view, Pinker may be correct when he claims that abstract notions like "political freedom" are likely to emerge even under oppressive political conditions (1994, p. 82). But this is not, as Pinker insists, because such notions must be hard-wired into the mind/brain, but rather because they play an indefinite but vital role in the complex relationships between language-user and context, a relationship inevitably pervaded by such factors as psychological and/or physical need, and epistemic uncertainty.

Given the complexity of these relationships, it is hardly surprising that such contexts underdetermine whatever might count as relevant linguistic "stimuli." I will argue, however, that this does not reflect a poverty of stimulus. Quite to the contrary, underdetermination acts as a catalyst toward language development in that it provides precisely the changing, more or less uncertain, not fully choate epistemic conditions under which languages evolve as public systems within which needs can be mediated, relationships developed, contracts negotiated, pain expressed, desires communicated, mistakes made, ideologies formulated, etc. In other words, contextual indefiniteness and indeterminacy — *underdetermination* — provides the conditions under which languages evolve precisely *because* such systems are *useful* to, for example, the Nicaraguan children who developed *Lenguaje de Signos* and *Idioma de Signos*.

Such an account proceeds on the assumption that regardless of the cultural, social, or political differences (and without diminishing the significance of these differences), potential language-users share a range of family resemblances relevant to the acquisition and development of language. This range includes embodiment and phenomenal experience, sensory organs, emotion, intellect, motor skill, sexual desire, experienced pain, etc. Such a theory, then, has no need to postulate innate cognitive structures like a "language of thought" to account for similarities among human languages, for such similarities are not mysterious: *languages are bound to bear as much a family resemblance to one another as do the experiences of language users conceived not as Cartesian minds but as embodied, contextually and epistemically situated organisms*. Moreover, I will argue that while no one seriously doubts that the brain and nervous system play a central role among these similarities, recognizing this neither requires nor implies the existence of an innate cognitive "module" or "language instinct" specifically evolved *for* language (e.g., Chomsky, 1993).

On the one hand, to hypothesize a language of thought does offer certainty that, given a poverty of stimulus, there *must* exist some a priori innate cognitive structure to account for language. The catch is that we must be willing to accept a Cartesian conception of subject and context which premises this certainty. On the other hand, while the alternative account I will sketch here can guarantee no more certainty than that made possible through the

empirical and social sciences from which it draws, it comes without the catch, and offers a framework within which to develop accounts of language acquisition and development which cohere with and make sense of the complex relations between language, contexts, and language using subjects.

Linguistic Determinism versus the Language of Thought Hypothesis

In *The Language Instinct* Pinker argues that *either* "linguistic determinism" is true and the acquisition of concepts is caused by exposure to spoken words, *or* the mind/brain must contain a "language instinct" or evolved cognitive "module" within which linguistic data are processed via "mentalese" or a "language of thought" (1994, pp. 55–84). Taking the Sapir–Whorf hypothesis as paradigmatic of linguistic determinism, Pinker argues that both its strong version, "that people's thoughts are determined by the categories made available by their language," and its weaker version, "that differences among languages cause differences in the thoughts of their speakers" (linguistic relativity) are hopelessly faulty (p. 57).

> But it [linguistic determinism] is wrong, all wrong. The idea that thought is the same thing as language is an example of what can be called a conventional absurdity: a statement that goes against all common sense but that everyone believes because . . . it is so pregnant with implications . . . . Think about it. We have all had the experience of uttering or writing a sentence, then stopping and realizing that it wasn't exactly what we meant to say. To have that feeling, there has to be a "what we meant to say" that is different from what we said . . . . And if thoughts depended on words, how could a new word ever be coined? How could a child learn a word to begin with? How could translation from one language to another be possible? (pp. 57–58)

In stark contrast to linguistic determinism Pinker proposes the *language of thought hypothesis*. Modeled on Fodor's fundamentally Cartesian representational theory of mind and Chomsky's notion of a "universal grammar," Pinker argues that experience does not determine but rather *occasions* the emergence of language, itself an expression of ideas represented in a "language of thought," that is, represented in the mind/brain via the machinations of specific cognitive structures or "modules" "designed" through basically Darwinian processes:

> People do not think in English or Chinese or Apache; they think in the language of thought. This language of thought probably looks a bit like all these languages; presumably it has symbols for concepts, and arrangements of symbols that correspond to who did what to whom . . . . But compared with any given language, mentalese must be richer in some ways and simpler in others . . . . Knowing a language, then, is knowing how to translate mentalese into strings of words and vice versa. People without a language would still have mentalese, and babies and many nonhuman animals presumably have simpler dialects. Indeed, if babies did not have a mentalese to translate to and from English, it is not clear how learning English could take place, or even what learning English would mean. (pp. 81–82)

And further,

> Since I have been trying to convince you that there is a language instinct but would certainly forgive you if you would rather believe Darwin than believe me, I would also like to convince you that you need not make that choice. Though we know few details about how the language instinct evolved, there is no reason to doubt that the principal explanation is the same as for any other complex instinct or organ, Darwin's theory of natural selection. (p. 333)

Mentalese, then, describes that cognitive "code" into which natural languages are translated, and which thereby make learning, that is, the occasioning of ideas already encoded in the language of thought, possible. Pinker's project is to wed the language of thought hypothesis to an evolutionary account of the brain via an account of a specific form of neural circuitry, namely, the circuitry of the *language instinct*.[2]

Pinker's project promises to reconcile the irreconcilable: rationalist cognitivism and empiricist philosophy of the mind/brain. Either linguistic determinism is true (one or both versions of the Sapir–Whorf hypothesis), *or* the language of thought hypothesis is true:

> Is thought dependent on words? Do people literally think in English, Cherokee, Kivunjo, or, by 2050, Newspeak? Or are our thoughts couched in some silent medium of the brain — a language of thought, or "mentalese" — and merely clothed in words whenever we need to communicate them to a listener? No question could be more central to understanding the language instinct. (p. 56)

This reasoning, however, rests on the postulation of a false dilemma. For while both propositions could be false, some as yet unimagined third account of language aquisition could be true. Pinker must justify the claim that there are, in fact, only two possibilities: one rooted in the context of language, and one in the subject's mind/brain. For even if he is correct and linguistic determinism is false, this is not in and of itself evidence that any opposing theory is true. Indeed, creationists typically argue that if they can show that the theory of natural selection is false, then the "theory" of creation must be true, but clearly this does not follow. Similarly, the falsity of linguistic determinism does not imply the necessity of the existence of a language instinct.

Pinker does, however, offer two additional arguments in support of the language of thought hypothesis. Appealing first to the feeling of not having said what one meant to say, Pinker suggests in the "wrong all wrong" passage that

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[2]It is also notable that Pinker appears to accept the thesis that user-subjects enjoy introspective transparence, that is, that we are infallibly aware of the contents of our own minds. I would argue that this assumption is of a piece with the assumptions that support the poverty of stimulus thesis and hence is traceable back to the same fundamentally Cartesian conceptual framework, but this issue is beyond the scope of the present paper.

a language of thought can be inferred from the feeling we experience on occasion that we have not said what we thought. There must be, he claims, a "what we meant to say" behind the feeling that we didn't say it. But surely a feeling of a lack of certainty provides sketchy criteria at best. Feelings, gut instincts, hunches, and the like, are not generally accepted as suitable criteria against which to judge hypotheses even if we accept the notion, as Pinker apparently does, that the content of such feelings are fully transparent to us. Even if we were prepared to accept what we might call the feeling-criterion as indicative of some underlying cognitive structure, it seems a leap of faith to infer a language of thought on the basis of so little.

Pinker's second argument appeals to the undesirable social consequences of accepting linguistic determinism. It is no accident that Pinker's entre into chapter three of *The Language Instinct* is conducted by way of George Orwell's *Nineteen Eighty-Four*. Pinker argues that if linguistic determinism is true, and language determines thought, then we are but one short step away from the oppression, indoctrination, and false consciousness made possible by Newspeak: whoever controls the language controls the thoughts of those who speak it (pp. 55–56, 82). But this line of reasoning is faulty. That the consequences of a particular view may be undesirable (to some) is irrelevant to its truth or falsity. Some religious fundamentalists argue that the theory of evolution is false because to accept it generates what are from their point of view undesirable consequences which, they argue, follow from the dislocation of humans from the center of God's creation. Hence the Genesis creation account, they conclude, must be true. Similarly, Pinker argues that, given the undesirable consequences which may follow from linguistic determinism, the language of thought hypothesis must be true. The trouble, however, is that abhorrence of an Orwellian distopia does not make it impossible.

Some light is shed on why Pinker settles for this rather shallow line of reasoning when, later on, he approvingly quotes Fodor's disdain for cognitive relativism: "The thing is: I hate relativism. I hate relativism more than I hate anything else, excepting, maybe, fiberglass powerboats" (1994, p. 405). For Fodor linguistic determinism and cognitive relativism are of a piece. Human cognitive malleability is dangerous because it raises the spectre of cultural (and hence linguistic) determinism; thus, our "cognitive architecture" that includes a module for a language of thought must be "rigid" and "fixed" (pp. 405–406). But Fodor's reasoning here is as specious as Pinker's: just as it makes little sense to premise the existence of a language of thought on the mere feeling (however intuitively certain) that we do not always say what we mean, it makes just as little sense to insist that linguistic determinism is false simply because its implications are unpalatable.

To answer the question why, given the weakness of the feeling and social consequences arguments, Pinker seems sure about the language of thought

hypothesis returns us to his need to justify the set-up of his original dilemma. Should we conceive language in the dichotomizing subject versus context terms Pinker offers us? If his arguments for the language of thought hypothesis do not show that linguistic determinism is "wrong, all wrong" (pp. 57–58), could we instead show that it relies on assumptions about the context that are themselves faulty? According to Pinker, the claim that linguistic determinists must show is that contexts somehow cause language acquisition. If this is false does it mean that the contexts of language acquisition exhibit such a poverty of relevant stimuli that they have no role to play other than that of occasioning language?[3]

The Poverty of Stimulus Thesis

In his essay "On the Nature, Use, and Acquisition of Language," Chomsky argues for a computational version of Descartes' representational theory of mind:

> It seems reasonable to resort to a representational theory of mind of the Cartesian sort, including the concept of mind as an information processing system that computes, forms, and modifies representations; and we should also adopt something like the Cartesian concept of innate ideas as tendencies and dispositions, biologically determined properties of the mind/brain that provide a framework for the construction of mental representations, a framework that enters into our perception and action. (1993, p. 514)

The most recent incarnation of a "mentalism" whose roots extend at least as far back as Plato's *Meno* (pp. 511, 516), Chomsky argues that, given the poverty of suitable linguistic stimulus, the only way to explain the emergence and acquisition of language is via the postulation of a language of thought, the "faculty" postulated in a representational theory of mind: "How do we come to have such rich and specific knowledge, or such intricate systems of belief and understanding, when the evidence available to us is so meager?" (p. 518). "[I]t is difficult," remarks Chomsky, to see what other interpretation can be given "to explain a child's ability to recognize complex truths" (for example, the slave boy's ability to recognize the truths of geometry in the *Meno*) [p. 516].

According to Chomsky, then, the Platonic/Cartesian tradition in philosophy exemplifies a fundamental truth about language acquisition:

> Knowledge of language within a speech community is shared to remarkably fine detail, in every aspect of language from pronunciation to interpretation. In each of these

[3]I have not addressed the possibility that Pinker's representation of linguistic determinism may itself be an oversimplified straw, though this is distinctly possible. My aim here is to show that even if Pinker represents Whorf/Sapir fairly and accurately, his argument for accepting the language of thought hypothesis fails.

> aspects, the knowledge attained vastly transcends the evidence available in richness and complexity, and in each of these aspects, the fineness of detail and the precision of knowledge goes well beyond anything that can be explained on any imaginable functional grounds, such as the exigencies of communication. (p. 521)

This passage captures the essence of the poverty of stimulus thesis, namely, that contexts in which languages are acquired are so woefully impoverished with respect to relevant stimuli that no context could provide stimuli adequate to the emergence and acquisition of a language. Something else, therefore, must account for the fact that a child is able, over the course of a finite childhood, to acquire the necessary rudiments of her or his native tongue, however indefinitely rich and complex it is. What else could account for this ability, asks Chomsky, but a language of thought or language faculty operating within that cognitive architecture described by a representational theory of mind? How else could the Nicaraguan children have developed *Lenguaje de Signos* or *Idioma de Signos*, given their circumstances (or *any* circumstances)?

According to Chomsky, language "happens" to children who essentially act as spectators to their own linguistic maturation (p. 521). So too, Pinker argues that

> [a]s far as grammar learning goes, the child must be a naturalist, passively observing the speech of others, rather than an experimentalist, manipulating stimuli and recording the results. The implications are profound. Languages are infinite, childhoods finite. To become speakers, children cannot just memorize; they must leap into the linguistic unknown and generalize to an infinite world of as-yet-unknown-spoken sentences. (1994, p. 281)

Children are "passive naturalists" precisely because no amount of "experimental manipulation" of stimuli (whatever this might mean) could make up for the poverty of stimulus exhibited by a given context. Pinker's "leap," then, parallels Chomsky's "transcendence" in that both imply that no context no matter how rich could provide adequate stimulus.

Given Pinker's acceptance of the poverty of stimulus thesis, it is no wonder that he adopts the view that either linguistic determinism is true or the language of thought hypothesis is true. For if context inevitably underdetermines language acquisition, then no context *could* provide conditions adequate to support an argument for linguistic determinism. Not only, then, is linguistic determinism false but so too any theory of language acquisition grounded in the contexts of language users. For Pinker and Chomsky the implications are clear: if all contextual or "externalist" roads are irrevocably blocked by a poverty of stimulus, the only road left to follow toward an explanation of language acquisition must lead "inwards" to a language of thought (or to a language instinct) [Chomsky, 1993, p. 526].

If correct, the poverty of stimulus thesis provides a far more secure basis for the language of thought hypothesis than either the "feeling argument" or the "undesirable social consequences" argument. The trouble, however, is that reliance upon the poverty of stimulus thesis generates an irresolvable circularity within the cognitivist's project. *For to presuppose the poverty of stimulus thesis is in fact to presuppose the very Cartesian conceptual framework it is the cognitivist's task to establish, and to assume the thesis without having independently justified this framework begs the question whether the framework itself is sound.*

The way that Pinker, for example, poses the question whether "thought is dependent on words" or, given the poverty of stimulus thesis, whether it is merely "clothed" in words relies on the fundamentally dualistic assumption that subjects are radically distinguishable from the contexts in which they use languages (1994, p. 56). For to determine which of these is the most plausible, Pinker must *already* assume that either the origin of thought is *external* to the subject (in words), or the origin of thought is *internal* to the subject (merely clothed in words). If the former (linguistic determinism), the subject suffers no poverty of stimulus; if the latter, the linguistic poverty is so endemic as to require a language of thought to facilitate language acquisition. But to assume that this dualism is sound is to assume that which it is Pinker's burden to prove, namely, that the Cartesian conceptual framework, of which subject/context dualism forms an essential component, is itself sound.

Similarly, Chomsky argues that given a poverty of linguistic stimulus, the varied and subtle grammatical distinctions children are able to make in the interpretation of grammatically similar sentences is explicable only on the assumption that the child "knows" how to make such distinctions in virtue of the "computational system" (or language of thought) operating in any act of cognition (1993, pp. 525–528). Chomsky advises us not only to "abandon" the term "learning" but also any exploration of the contexts in which learning was thought to occur "as a relic of an earlier age" precisely because children do not learn: rather, experience merely occasions the "growth" in the child of knowledge whose "seeds" are already "planted" (p. 520). Chomsky's argument, however, is circular in that he assumes the validity of the poverty of stimulus thesis, deploys it to support his argument which, in turn, reinforces the thesis.

Chomsky does not show that the poverty of stimulus thesis is defensible; rather he assumes that the subject-user of a language is radically distinguishable from the contexts in which she or he acquires it, but fails to recognize that this assumption is itself built into the thesis. *For were the subjects of language not radically distinguishable from their contexts, it would be impossible to identify the contexts whose stimuli are impoverished. But did the lack of stimulus not mean that no context could provide stimulus adequate to language acquisition,*

it would be impossible to identify the subject-users who "just know" how to make grammatical distinctions. If Pinker's claim that thought is merely clothed in words is correct, then he must show that the underdetermination of stimulus inevitably constitutes a poverty; similarly, if Chomsky is correct, and children just know a priori how to make grammatical distinctions, then he must demonstrate that the Cartesian framework he explicitly adopts, and in which the poverty of stimulus is firmly embedded, is justified.[4]

Underdetermination and the Conditions of Language

Despite its circularity, the poverty of stimulus thesis goes unchallenged because it supports what Pinker and Chomsky argue is the only viable alternative to linguistic determinism, namely, the language of thought hypothesis. Once we recognize, however, that the poverty of stimulus thesis depends on a dichotomizing of context and subject itself embedded in the Cartesian framework whose task it is the cognitivists to defend, and that Pinker's feeling and social consequences arguments, weak on their own, are supported by a tacit appeal to this thesis, the door is opened to the possibility that *both* linguistic determinism and the language of thought hypothesis are "wrong, all wrong."

Given this framework, however, it is hardly surprising that these cognitivists identify the underdetermination of stimulus in any particular context with a poverty of stimulus generalizable to all. Such an identification is, however, spurious in that it is possible to theorize alternative accounts of language which both take underdetermination seriously *and* eschew the subject–context dualism cognitivists tacitly endorse. In *Wittgenstein: A Way of Seeing*, Judith Genova provides the first clue toward the construction of one such account premised on the remarks of later Wittgenstein:

> Language represents because it was born to, only it wears its DNA on its sleeve. That is, it isn't a potential structure actualized by use (Chomsky, Aristotle), but a virtual machine formed by its use . . . a word is its functions, nothing else. It isn't a spatio-temporal structure, but an abstract one. Like the soul it will not be found by dissection. The connection, one, like Wittgenstein would like to say, between language and the world, is no longer conceived as internal, but external. Humans provide the mechanism that makes language work. However, this is poorly said; the scale internal/external or the corny opposition "Man and the World," no longer makes sense in Wittgenstein's later philosophy. Because humans are an integral part of nature, and language an integral part of being human, one can no longer think of human intervention as external. (1995, p. 119)

[4]See also Ludwig Wittgenstein's *On Certainty* (1972), para. 105.

According to Genova's interpretation of Wittgenstein, language operates like a "virtual machine" (pp. 36, 54). The acquisition of language requires neither an internal language of thought to facilitate it, nor is it externally caused by specifically linguistic stimuli, the emergence of language is accountable to the conditions within which humans, as "integral parts of nature," act, choose, judge, doubt, think, hope, and live.[5] "Language," Genova argues, "is not a representational structure, but a presentational act" or "game" whose conditions are not premised on the radical dichotomizing of subject and context, but rather on the myriad elements of a context, or form of life, which, I will argue, underdetermine but do not impoverish it (pp. 117, 118).

On a Wittgensteinian account the underdetermination of stimulus is not only *not* identifiable as a poverty of stimulus, but forms the very conditions under which the emergence and acquisition of language is made possible. With respect, for example, to phrases like "I know" Wittgenstein remarks in *On Certainty* :

> Thus the purpose of the phrase "I know" might be to indicate where I can be relied on; but where that's what it's doing, the usefulness of this sign must emerge from *experience*. (1972, para. 575)

The conditions under which one might use the phrase "I know" underdetermine its meaning, for while one might use it to confirm one's reliability, one might also use it for many other purposes, for instance, to express an attitude of certainty (para. 30, 404), or to show that one can say something (para. 591), or as a substitute for "that is" (para. 588). Whatever the case, usefulness emerges from experience under some particular set of conditions, within a certain context.

To say that the conditions of a word's use underdetermine its meaning is to say *neither* that contexts *cause* the acquisition of a language the meaning of whose words is clear, *nor* that contexts merely *occasion* the use of words whose meanings are clear, but that the meaning of a word is the product of the relationship between the experiencing user-subject and the context in which a particular use makes (or does not make) sense:

> If I say "an hour ago this table didn't exist" I probably mean that it was only made later on.
>
> If I say "this mountain didn't exist then," I presumably mean that it was only formed later on by a volcano.

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[5]See also Wittgenstein, 1970 para. 545, 567, 568, and Wittgenstein, 1972 para. 110, 149, 156, 160, 166, 174, 199, 204.

> If I say "this mountain didn't exist half an hour ago," that is such a strange statement that it is not clear what I mean. Whether for example I mean something untrue but scientific. Perhaps you think that the statement that the mountain didn't exist then is quite clear, however one conceives the context. But suppose someone said "This mountain didn't exist a minute ago, but an exactly similar one did instead." Only the accustomed context allows what is meant to come through clearly. (1972, para. 237)

However we are to understand each of these claims depends upon the "accustomed" contexts in which they are made and the relationships which animate those contexts. Like the phrase "I know," "an hour ago, this table didn't exist," may mean that it was just built, or refer to a large flat rock put into service as a table, or may refer to a table that has been restained and varnished. Whatever the case, the meaning of this sentence cannot be known independently of the context in which it is used, and there are many different contexts in which it can be used. "Making sense," then, refers not to contextless meaning, but to the usefulness of words with respect to communicative actions; as Wittgenstein puts it, "it is our acting which lies at the bottom of the language game" (1972, para. 204, 110; 1970, para. 21–23). Hence, "This mountain didn't exist a minute ago, but an exactly similar one did instead," makes sense only within particular contexts. Perhaps it's a line from a science fiction adventure story, or maybe it's a quirky but still comprehensible way of referring to gradual geological change. No matter; what the oddity of this sentence exemplifies is the central Wittgensteinian notion that the meaning of a word is its *use*, a notion which encompasses not only the context in which words *are* used but the myriad relations which characterize peculiarly human forms of life as these are reflected in use.

On this model of language, the notion that context merely occasions the application of a concept firmly embedded in a subject's language of thought makes no sense, for as the above examples illustrate, *there are no definite meanings outside the wide and indefinite array of communicative actions* (outside language games), *hence there is nothing to apply* (1970, para. 16–17, 154). Contrary to Fodor's insistence that the concepts which compose the language of thought must be "fixed" and "rigid," Wittgenstein shows that "[l]anguage did not emerge from some kind of ratiocination," but rather from the complex and changing interactions between human beings conceived as a species of animal and the world which they inhabit as a kind of animal. As Wittgenstein puts it, "[a]ny logic good enough for a primitive means of communication needs no apology from us" (1972, para. 145).

To argue that the context of a language underdetermines its emergence and development is not to concede the cognitivist's claim that such contexts exhibit a poverty of stimulus, but rather the reverse. "The child," Wittgenstein remarks, "learns to believe a host of things,"

> I.e. it learns to act according to these beliefs. Bit by bit there forms a system of what is believed, and in that system some things stand unshakably fast and some things are more or less liable to shift. What stands fast does so, not because it is intrinsically obvious or convincing; it is rather held fast by what lies around it. (1972, para. 144, 220)

Children neither acquire nor apply single propositions traceable to particular stimuli; rather, they learn to "believe a host of things" traceable to no one thing in particular, but rather to a whole context reflected only more or less choately by a "system of what is believed." Wittgenstein remarks that "[w]hen we first begin to believe anything, what we believe is not a single proposition, it is a whole system of propositions," some of which "stand fast" not because they are hardwired into the mind/brain, but because they are "held in place" by the relationships through which subjects mediate a form of life via language (para. 141, 410; 1970, para. 175).

From a Wittgensteinian perspective, then, the cognitivist's notion of "stimuli" makes no sense, for it mistakes contexts in which there exists no single type of stimuli capable of justifying the case for linguistic determinism for contexts which exhibit a *poverty* of stimulus. But that there exists no one such type shows only that contexts underdetermine language, e.g., that no *single* type of stimulus causes the acquisition of a language (nor any combination of stimulus types). As Genova rightly points out, the external/internal, context/subject distinction implied in the cognitivist's use of notions like "stimulus" has no application to language acquisition, for it cannot capture the "system of propositions" children learn (1970, para. 19–20), nor the complex and evolving contexts in which they learn it.

Contrary to Chomsky's recommendation that we abandon the notion that children learn in favor of the notion that they are passive spectators to language acquisition, on a Wittgensteinian account children are conceived as active participants for whom learning consists in mediating needs and desires within particular contexts through language (1953, para. 7, 65). Hence, children do not simply "know" innately, rather "[i]t is always by favor of nature that one knows something" (1972, para. 505). That is, knowing (like believing, desiring, etc.) is not some thing that one has, but rather an activity that it is possible for one, as a particular animal under particular circumstances, to do (1953, para. 415).

We might say, then, that "[l]ight dawns gradually over the whole" (1972, para. 141, 142). That is, the development of languages like *Lenguaje de Signos* and *Idioma de Signos* cannot be adequately attributed to the activation of concepts in mentalese, but rather requires a longer, more arduous route of explanation through the complex psychological and epistemic flora and fauna which characterize a human form of life (1972, para. 141). For the emergence of a language is not secured by its moorings in a language of

thought, but rather is held in place by beliefs (including hopes, expectations, desires, fears, ideas, etc.) confirmed or disconfirmed on the basis of experience. "I have arrived at the rock bottom of my conviction," remarks Wittgenstein, "And one might say that these foundation walls are carried by the whole house" (1972, para. 248, 235, 204, 105, 94–99, 82–83).

Word-Tools and Language Instincts

As Dennett correctly notes, both Chomsky and Fodor evince palpable hostility toward the suggestion that sciences such as biology, anthropology, evolution, or neurophysiology could shed much important light on the emergence and acquisition of language (1995, pp. 368, 382–383, 386, 389–393). Neither Chomsky nor Fodor deny that the ultimate basis of the language "faculty" is the brain (Chomsky, 1993, p. 512), but both regard it as dubious that empirical investigation (at least in the biological sciences) is likely to significantly advance our knowledge of language's innate conditions (Dennett, 1995, p. 389). Not so Pinker who insists that we need not make a choice between mentalese and a Darwinian account of the mind/brain (1994, p. 333).

As we have seen, however, Pinker's postulation of a language instinct no better explains language acquisition than do Fodor's or Chomsky's languages of thought. For by appealing tacitly to the poverty of stimulus thesis, Pinker embraces the same Cartesian conceptual framework, and with it the circularity which infects the cognitivist's use of notions like stimulus. Pinker's hope to reconcile cognitivism and empiricism is thus destined to remain unfulfilled, for to justify the language instinct requires vindicating the Cartesianism which supports cognitivist disregard of work in the empirical sciences.

Jettisoning the poverty of stimulus thesis, however, does not commit us to its equally implausible other, linguistic determinism. Both Pinker and Chomsky theorize on the basis of a false dilemma borne of subject/context dualism, and hence both mistake the underdetermination of stimulus for a poverty of stimulus. If a Wittgensteinian account is in fact more plausible, then underdetermination constitutes not a poverty, but rather the conditions which motivate the development and acquisition of language. For only under conditions which are not wholly psychologically or epistemically choate does language become useful to particular sorts of animals.

Still, a Wittgensteinian alternative is not wholly satisfying on its own, for it is not yet clear whether a contextualized conception of subject, context, and language coheres with or is supported by work in the empirical sciences. It is difficult, moreover, to overestimate the importance of forging such links given that humans are conceived on this account as a species of evolving animal. I suggest, however, that not only is it possible to forge such links, but

that much of the fundamental spadework has already been done by empirically oriented philosophers of mind such as Dennett. Arguing for a view of language — one might even say a "language instinct" — Dennett eschews the Cartesianism of Chomsky and Fodor and opts for an account of brain specialization grounded in design by natural selection (1995, pp. 370–400).

For Dennett, humans are best described as "Popperian creatures . . . whose brains have the potential to be shaped into inner environments with preselective prowess," and who are capable of presorting "their behavioral options before striking out" (p. 376). While sharing a wide and varied assortment of instincts, hardwired responses, and routinized reactions with our primate relatives (p. 377), humans are also *tool-users*, and not only of sticks and stones, but of *words* (pp. 377–378). Similarly, Wittgenstein remarks that we ought to

> [t]hink of the tools in a tool-box; there is a hammer, pliers, a saw, a screw-driver, a rule, a glue-pot, glue, nails, and screws. The functions of words are as diverse as the functions of these objects. (And in both cases there are similarities.) [1953, para. 11; 1970, para. 110–118].

The meanings of words, like that of nails and screws, are not given or knowable a priori, but rather are as diverse as the multiple uses to which they are put in particular contexts. Moreover, argues Dennett, "tool use is a two-way sign of intelligence; not only does it require intelligence to recognize and maintain a tool , . . . but tool use confers intelligence on those who are lucky enough to be given the tool" (1995, pp. 377–378). Words, the pre-eminent tools, are "mind-tools" in that they provide a creature an "inner environment that permits it to construct ever more subtle move-generators and move-testers" (ideas, strategies, insights) which aid it in decision-making and ultimately in action (p. 378).

"What happens," asks Dennett, "to a human or hominid brain when it becomes equipped with words?"

> In particular, what is the shape of this environment when words first enter it? It is definitely not an even playing field or a tabula rasa. Our newfound words must anchor themselves on the hills and valleys of a landscape of considerable complexity. Thanks to earlier evolutionary pressure, our innate quality spaces are species-specific, narcissistic, and even idiosyncratic from individual to individual. (p. 378)

To become equipped with words, is, for Dennett, to have acquired through natural selection and environmental interaction a tool whose use confers even greater plasticity and intelligence on its user. As Wittgenstein might have put it: use confers meaning; that is, the meaning of a word-tool is directly related to the tasks which can be performed with it (such as broadcasting a warning, making a threat, soliciting a favor, airing a grievance, negotiating an agreement, expressing an idea, etc.), the importance of those tasks, and that, unlike most other tools, a word is *efficiently* reproducible and

communicable (1953, para. 23, 53, 241–243). Word-tool use is a "two-way sign" precisely because it signifies a subject and context relationship which is reciprocal, evolving, and mutually reinforcing.

For Dennett, however, environment refers not only to the external world but also to the internal world of the mind/brain, both of which are subject to the pressures of natural selection. Dennett agrees with the cognitivists that a mind capable of acquiring and using words could not have been a tabula rasa, but rather consists in the internal environment of the "hills" and "valleys" of previously selected traits, predispositions, and instincts. This agreement, however, does not commit Dennett to Pinker's view that a *particular* aspect of the brain's neural circuitry evolved specifically *for* language. This view, in fact, militates against Dennett's contention that the relationship between the internal and external environment is reciprocal. For in order for an instinct to have evolved *for* language, it would had to have evolved not through use, but in the mind/brain of the user-subject *prior* to use. Thus, words are not tools but rather merely the natural (external) "word-clothes" of a priori (internal) concepts whose interactions are not reciprocal, but one-way only from innate concept to the dress up of language.

Unlike Pinker's, Dennett's notion of a language instinct does not require the evolution of special neural circuitry. Rather, he argues that the vast gulf between humans and other species of animal must be due to "two intermeshed factors, each of which requires a Darwinian [as opposed to an a priori-istic] explanation":

> (1) the brains we are born with have features lacking in other brains, features that have evolved under selection pressure over the last six million years or so, and (2) these features make possible an enormous elaboration of powers that accrue from the sharing of design wealth through cultural transmission. *The pivotal phenomenon that unites these two factors is language.* (1995, p. 371, my emphasis)

That is, while human brains do clearly "have features lacking in other brains," which "make possible an enormous elaboration of powers" these powers do not accrue through the application of concepts innate to a language of thought, but rather through the "sharing of design wealth through cultural transmission," that is, through the use of a language:

> Our human brains, and only human brains, have been armed by habits and methods, mind tools and information, drawn from millions of other brains which are not ancestral to our own brains. This, amplified by the deliberate, foresightful use of generate and test in science, puts our minds on a different plane from the minds of our nearest relatives among the animals. This species specific process of enhancement has become so swift and powerful that a single generation of its design improvements can now dwarf the R&D efforts of millions of years of evolution by natural selection . . . our brains are in effect joined together into a single cognitive system that dwarfs all others: language. (p. 381)

For Dennett, like Wittgenstein, a culture both underdetermines and is underdetermined by (reflects and is reflected by) the languages which emerge through the multiple and complex interactions and transactions among human brains equipped with their "habits, methods, and mind-tools." As Wittgenstein remarks, "to imagine a language is to imagine a form of life" (1953, para. 19; 1970, para. 55, 175, 545, 567–568, 608–611). If language can be said to join our brains into a "single cognitive system," this is not because we recognize innate concepts which inhabit other minds, but because we share commonalties of experience and embodiment; it is because we share brains connected to the nervous systems, musculature, perceptual apparatus, organ arrangements, shape and size ranges, and ultimately the inhabitable environments, which characterize our "complicated form of life" in relation to other species of creature (1953, p. 174).

As Genova notes, the "corny" opposition of humanity and world, internal and external inevitably breaks down, for, as Dennett explains, both constitute environments whose "hills and valleys" are subject not only to natural selection, but to the word-tools whose use revolutionizes the intimate relationships among subjects and contexts. Hence, to ignore empirical research about how human brains, nervous systems, cultures, etc. evolved is to ignore material which may be crucial to the explanation of language acquisition, and without which we may be doomed to reproduce a Cartesianism which fails to do justice to human (and potentially other) *animals*.

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