FORM AND CONTENT:

DUALISM AND NONDUALISM IN THE STUDY OF CONCEPTS

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Abstract

Ludwig Wittgenstein presents a method for the clearing away of confusion in his *Philosophical Investigations*. Noam Chomsky presents a method for generating grammatical sentences in his theory of transformational generative grammar. On the surface, it appears these two thinkers use diametrically opposed approaches to philosophy of mind and language. Looking deeper, we will find the opposite is true. Chomsky studies linguistic theory, Wittgenstein is anti-theoretical. Chomsky takes a dualist approach, dividing the science of linguistic theory into syntax and semantics: linguistic form and content. He stresses the importance of logical and transformational analysis in the study of linguistic form, and urges us to take considerations of meaning and reference seriously, on their own terms (Chomsky, 1957, 1965, 1975).

Wittgenstein’s anti-theoretic method finds kinship with Buddhist nondualism; as a kind of Zen master among analytic philosophers, Wittgenstein coaxes the student to climb the ladder of logic and rigor and then kicks the ladder away. Having renounced the metaphysics of logical atomism and the *Tractatus Logico-Philosophicus*, in the *Investigations* Wittgenstein develops a therapeutic approach to philosophy. On one level, using Wittgenstein’s terms, he and Chomsky are playing two very different language-games. On a deeper level, both thinkers are primarily interested in finding the limits of language and thought, thinking as clearly and critically about the mind and its manifestations as possible, and the nature of language use. By bringing these two thinkers together and examining their insights and methodologies in parallel, much could be gained in contemporary cognitive science.

In §3 of this essay, we will discuss Wittgenstein’s therapeutic philosophical technique in the context of Chomsky’s theory of transformational generative grammar and characterize what
Chomsky calls “the creative aspect of language use” (CALU). We’ll also discuss Cartesian dualist and Nāgārjunian nondualist approaches to cognitive science to help characterize the CALU. For that discussion to be meaningful we have to get clear on the nature of meaning and the limits of a semantic theory of natural language: that will be the subject matter of §2. And for context, we develop in §1, an understanding of the origins and contemporary manifestations of the mechanical conception of the nature of the Universe: the mechanical philosophy.
I. The Nature of Mechanical Philosophy

Defining Form, Content, and the Creative Aspect of Language Use

Wittgenstein wrote: “A philosophical problem has the form: I don’t know my way about.” (Wittgenstein, *PI* §123, 1953). Cognitive science has a philosophical problem: those aspects of the mind which we would most like to understand, we don’t know how to investigate. We don’t even know if it is possible to investigate them. In the words of the late, great Jerry Fodor:

“I suspect nobody has anything to contribute to the study of consciousness as of the latest tally… Chomsky somewhere makes a distinction between what he calls problems and mysteries. Problems are things you can work on. You may not know how to solve them but at least you can work on them. Or at least you know how to formulate some of the questions you’d like to have answered about them. Mysteries meet none of those conditions. And consciousness is a mystery. We not only don’t know what it is, and not only don’t have a theory of it, but we don’t even know what it would be like to have a theory of it,” (Fodor, 18:01-18:34, pub. 2015).

No pun intended. The paradigmatic mysteries in contemporary cognitive science are *phenomenal consciousness*, as Fodor described, and what I will call, following Noam Chomsky (1998), *the creative aspect of language use*. Phenomenal consciousness refers to the subjective, felt, “what it is like” characteristic of certain mental states (Nagel, 1974). The creative aspect of language use refers to a suite of interrelated observations about language use by human beings
that indicate a fundamental difference between mindless automata and beings with human minds (Chomsky, 1998):

1) **The Creative Aspect of Language Use** = \( df \) unboundedness + intelligibility + non-determinability

1.1) humans make infinite use of a discrete, finite alphabet and lexicon (df. unboundedness);

1.2) the language we use is systematic and appropriate to situations (df. intelligibility);

1.3) language use is not determined by situations; in a given situation, a speaker may say whatever they will (df. non-determinability).

Chomsky and I take (3) to mean that *even the microphysical structure* of the brain does not *determine* language use. In Chomsky’s view, the contemporary period of study is a serious regression from Enlightenment thinking on the matter of mind (Chomsky, 8:51, 1992). The history of science and philosophy of mind, he contends, is not well understood, and this confusion has led to “dubious” intellectual moves made during the Cognitive Revolution of the 1950s. It will be the work of this section and §2 to explain what obstacles prevent us from a deeper science of the mind than is currently pursued. This section deals with a misuse of the concept *form*. §2: *The Nature of Semantic Theory* discusses the misuse of the concept *content*. 

*Form and Content* is how Wittgenstein formulated his definition of *substance* -- that which

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1 Whenever a word is both **bold** and *italic*, it signifies “the concept of such-and-such”. Words which are **bold** are definitions. Words simply *italicized* are done so for various reasons. Words in quotes refer to the “word”.

“exists independently of what is the case” in his *Tractatus Logico-Philosophicus* (Wittgenstein, TLP 2.024-2.025, 1921). This will be a useful formulation for our purposes, because it tracks quite closely the Cartesian Dualism of *res extensa* (extended things) and *res cogitans* (thinking things) (Descartes, 1637). Cartesian dualism, a kind of substance dualism, assumes that the essence of two kinds of substance are respectively extension and thought; in our formulation, we will use *form* to mean structure and thereby extension -- the notion of *abstract structure* appeals to the idea of extension in an abstract space; this is not exactly Cartesian extension, but isn’t so different either. *Content*, we will use to mean the first-personal, the phenomenal, the meaningful.

To no small extent, the argument and account of the nature of mind I will present was inspired by Wittgenstein’s *Philosophical Investigations*, so “our investigation is therefore a grammatical one,” (Wittgenstein, PI §90, 1953). In a technical, Chomskyan sense, the grammar of the title of this paper, “Form and Content” contains a constructional homonymity: “In general, we say that we have a case of *constructional homonymity* when a certain phoneme sequence is analyzed in more than one way on some level,” (Chomsky, 86, 1957). Knowing, as we do now, the origins of the title, the sequence, “Form and Content” which is defined as “substance” can be read as juxtaposition: *Form* and *content* as substance dualism, where we can think of *form* as *res extensa* and *content* as *res cogitans*. Or we can read the title as *form and content*, as a substance monism, where “and” is a bridge, not a barrier. The space between these two constructions, where we recognize the ambiguity in the construction and do not posit a definition -- or essence -- would roughly be *nondualism*. Currently formulated, these are broad brushes, but I must first write in thick, oily strokes to give the impression of the idea I wish to convey; the detail work
will come out in §§2-3, after these words have had time to dry. Such is the nature of constructional homonymity at the level of semantics.

The point I am making is that simultaneously with our philosophical investigation of the mechanical philosophy in this section, it will be crucial that the grammatical investigation (in the Wittgensteinian sense), the investigation of how these words have been interpreted “hangs in the air along with what [they interpret],” (Wittgenstein, PI §198, 1953). This is how Wittgenstein does philosophy, and how we will do philosophy in this paper. In this section, we will conduct a grammatical investigation of philosophy. In the next section, we will conduct a philosophical investigation of grammar (in the Chomskyan sense). Thus, the form of this paper is attempting to mirror its content: the meaning I wish to convey with this paper is created by positioning constituents in accordance with a formal structure. It is not determined by it.

The Mechanism of Nature and the Nature of Mechanism

The substance of cognitive science is the form and content of the research conducted in that field. Every discipline has its methodologies; that is its form. Every discipline has its discoveries; that is its content. Waldron writes that within cognitive and neuroscience, “the task of ‘naturalizing mind’ has been underway for some decades now” and that most research in the brain sciences is explicitly or implicitly premised on the assumption that we will be able to understand the mind “by reference to nothing but the material processes measurable, in principle, by the natural sciences,” (Waldron, 68, 2011). Part of the form of cognitive neuroscience, therefore, is a hierarchical structure, where it is assumed that more “basic” sciences such as chemistry and physics are nested within and form the foundation for such a structure. From this view a kind of reductionism follows, but not merely, as we’d expect, the reduction of mentality
to mechanism; rather, the “idea of ‘naturalization’--that the only relevant facts are material facts,” Waldron argues leads to a reduction in our discourse, ironically enough, into a kind of substance dualism. He chides, in a discussion of the relation of neurons to qualia, that “if the brain is ‘dead matter’ (as if neurons were not living cells), then how could what is essentially material ever give rise to what is essentially subjective?” (Waldron, 73-4, 2011). This is the dualism we’ve built into our concept of physical, and it shows itself in how we are attempting to fit the content of our experience -- which is the subject matter of the science of the mind -- to the form of the science, which is gripped by reductionist materialism.

There are limited attempts within the neuroscience community to correct the “reductionist bias” which has strangled the field. Unfortunately, one of the most recent and articulate attempts at such a correction, Krakauer et al. (2017), fails to escape the gravitational pull of the reductionist project, and implicitly projects the very model of mind and method of neuroscience that the authors claim to reject. The authors claim neuroscientists use “ever more compelling tools available for neuroscience research, ranging from selective genetic targeting to optogenetic circuit control to mapping whole connectomes,” which are “coupled with a deep-seated, often tacit, belief in the reductionist program for understanding the link between the brain and behavior,” and insist on a “more pluralistic notion of neuroscience when it comes to the brain-behavior relationship,” (Krakauer et al, 480, 2017). Their paper is supposed to be an anti-reductionist or “corrective” view.

They ask, “why is it the case that explanations of experiments at the neural level are dependent on higher-level vocabulary and concepts?” and suggest an answer: the very nature of “mechanism” requires such holism. They argue in terms of considered appeals to “downward
causation” and “emergence”, writing, “a mechanism can be defined as ‘a structure performing a function in virtue of its component parts, component operations, and their organization,’” and therefore “a reductionist treatment of the components must be combined with investigation of how the total mechanism is organized and how it behaves when embedded in an environment,” (Krakauer et al, 485, 2017). Behavior is how the human machine functions at an organismic level; we want to understand the human machine on all levels of functioning: molecular, cellular, biological, psychological, and social. Therefore, on Krakauer et al’s (2017) account we must not let a focus on molecular and cellular machines detract the science of the mind from a consideration of psychological and social mechanisms which determine human behavior at higher levels. To correct the reductionist bias in neuroscience, we must remember humans are highly complex, biopsychosocial mechanisms.

This formulation of neuroscience presupposes, *a priori*, a certain conception of the nature of the mind -- and by extension the world -- as an essentially mechanical entity. “The modern Scientific Revolution starting with Galileo essentially was aimed to construct a picture of the world that was mechanical: an idea of the world as a machine… that was called the mechanical philosophy,” (Chomsky, 8:08-8:51, 1998). The reason that the mechanical conception of the nature of the mind and world is still with us today, 400 years later, results on Chomsky’s (1992, 1998) account, from serious, dubious, and ubiquitous misunderstanding of the history of science and philosophy of mind. “My own feeling is that the cognitive revolution has taken, from the very beginning, a rather dubious path. Maybe a wrong turn; and that the directions in which it is proceeding should be seriously reassessed from their very origins,” (Chomsky, 9:38-9:55, 1992).
Chomsky (1998) traces the origins of this wrong turn to the misinterpretation of Cartesian Dualism.

**The Ghost in the Mechanical Philosophy**

Descartes was an important contributor to the mechanical philosophy. He believed much of what we modernly call the human mind (sensation and perception, for example) and all of the human body worked by mechanical principles. Chomsky (1982, 1998) was highly critical of the received view of Descartes as a Christian apologetic who formulated his dualism and doctrine of innate ideas (cf. Descartes, 1641, Third Meditation) in defense of the Christian doctrine of the soul and the existence of God. The claim “that Descartes’s notion of innate ideas was developed solely to account for the truths of religion, [is] simply false,” (Chomsky, 434, 1982). Chomsky appealed to Descartes’ discussion of the creative aspect of language use -- though Descartes never used the term, that is Chomsky’s phraseology -- as a major contributing factor in the formulation of his dualism. Descartes wrote:

“If there were machines which bore a resemblance to our body and imitated our actions as far as it was morally possible to do so, we should always have two very certain tests by which to recognise that, for all that, they were not real men. The first is, that they could never use speech or other signs as we do when placing our thoughts on record for the benefit of others. For we can easily understand a machine's being constituted so that it can utter words, and even emit some responses to action on it of a corporeal kind, which brings about a change in its organs; for instance, if it is touched in a particular part it may ask what we wish to say to it; if in another part it may exclaim that it is being hurt, and so
on. But it never happens that it arranges its speech in various ways, in order to reply appropriately to everything that may be said in its presence, as even the lowest type of man can do. And the second difference is, that although machines can perform certain things as well as or perhaps better than any of us can do, they infallibly fall short in others, by the which means we may discover that they did not act from knowledge, but only from the disposition of their organs. For while reason is a universal instrument which can serve for all contingencies, these organs have need of some special adaptation for every particular action,” (Descartes, 35, 1637).

Descartes may have been a believing Christian, but he was also a principled scientist. He was aware of various automata that had been built to perform certain functions by “the industry of man” and had no doubt that the human “body” should be “regarded as a machine which, having been made by the hands of God, is incomparably better arranged, and possesses in itself movements which are much more admirable, than any of those which can be invented by man,” (Descartes, 1637, 34-5). Nevertheless, Descartes thought that “we ought not confound speech with natural movements which betray passions and may be imitated by machines” because he couldn’t conceive of an automata which could produce all of the infinite possible sentences of a language with the facility of a human being; each sentence would require a different disposition, or configuration of the internal organs (Descartes, 36, 1637). “Descartes argued that that’s the striking difference between humans and automata … In order to deal with that, Descartes had a problem. You couldn’t incorporate that within the mechanical philosophy … so he was forced to invent a new principle… what he called the ‘mind.’ So alongside ‘body’ which works by mechanical principles, there’s another principle, a kind of creative principle,” (Chomsky,
18:56-20:16, 1998). Incapable of incorporating the rational, creative use of language by human beings into the mechanical philosophy, Descartes “had described after this the rational soul and shown that it could not be in any way derived from the power of matter,” (Descartes, 36, 1637). The famous argument from radical doubt and the collection of properties of “being unbounded, undetermined, uncaused but appropriate to situations, coherent, evoking thoughts in others, and so on,” led Descartes to the conclusion that he had found evidence for an immaterial soul and elucidated some of its properties (Chomsky, 17:24-17:32, 1998).

Chomsky’s interest in Descartes is not metaphysical, however; he thinks Descartes’ move to construct a second principle was a “scientific move” given the knowledge of the day (Chomsky, 1998). “While we need not follow Descartes in postulating a second substance… some critical elements of the ‘Cartesian’ framework can be adapted and reconstructed in ways that make a good deal of sense,” (Chomsky, 434, 1982). The critical element we will reconstruct in this essay for contemporary cognitive science is the creative aspect of language use. First, we need to get a clear understanding of why the creative aspect is incompatible with the mechanical philosophy.

In his discussion of the evolution of Western thought, Barbour (1990) reflects on how the “medieval view of nature combined Greek and biblical ideas, reflecting the continuing influence of Plato and Aristotle as well as scripture,” as a “teleological” and “dualistic” world with “fundamental contrasts between soul and body, between immaterial spirit and transitory matter, and between the perfect eternal forms and their imperfect embodiment in the material world” (Barbour, 281, 1990). The Newtonian view, Barbour contends, differed in that “nature was deterministic rather than teleological. Mechanical causes, not purposes, determined all
natural events. Explanation consisted in the specification of such causes. It was asserted that the future could be predicted if we had complete knowledge of the past” (Barbour, 283, 1990). This account, which is a standard view of the history of science, is a radical misreading of Isaac Newton, according to Chomsky (1998):

“Here’s where misunderstanding enters. The fate of this doctrine [of Cartesian Dualism] should be clearly understood. It was overthrown within a generation by Isaac Newton. What Newton showed was that the theory of body was wrong. He didn’t have anything to say about the theory of mind. That stayed unchanged. Newton showed that the world just isn’t a machine. It works by mystical forces. That was an appalling discovery; Newton considered it a total absurdity and to the end of his life tried to overcome it but it was apparently true, namely, the force of attraction does not involve contact. So I can, you know, unbelievable as it is, move the moon just by lifting my arm and that’s just the way the world works. It has mystical forces… [Newton] was sharply condemned by the scientists of the day -- the leading scientists of the day -- for returning to neoscholastic mysticism with occult forces… and these were unintelligible forces, we couldn’t understand them; they were mysterious. (Chomsky, 20:44 - 22:04, 1998).

The standard view, articulated by Barbour (1990) above, which gave rise to the mechanical philosophy as a contemporary instrument of understanding the relation of mind to matter, has simply ignored or otherwise misunderstood Newton who explicitly stated (originally in 1713):

2Laplace’s demon is a well-known example of this idea: “We may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at a certain moment would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes.” (Laplace, 1812, trans. 1951)
“I have not as yet been able to discover the reason for these properties of gravity from phenomena, and I do not feign hypotheses. For whatever is not deduced from the phenomena must be called a hypothesis; and hypotheses, whether metaphysical or physical, or based on occult qualities, or mechanical, have no place in experimental philosophy,” (Newton, 943, 1726).

Newton died in 1727, at the age of 84. Richard Feynman, in a lecture on the “The Relation of Mathematics to Physics” delivered at Cornell University in 1964, explored the nature of Newton’s discoveries in more depth:

“We would wonder, how can [Newton’s law of universal gravitation, \( F = \frac{G m_1 m_2}{r^2} \)] be a universal law? How can this planet out there - what does it do? It looks at the sun, sees how far away it is, and it decides to calculate on its internal adding machine the inverse of the square of the distance and that tells it how much to move? This is certainly no explanation of the machinery of gravitation. So you might want to look further. Various people have tried to look further… maybe you can because nobody knows the ultimate [theory]. Up to today from the time of Newton, no one has invented another theoretical description of the mathematical machinery behind this law… so there is no model of the theory of gravitation today other than the mathematical form,” (Feynman, 7:07 - 11:20, 1964, pub. 2011).

These reflections should give us pause. If a mechanism is “a structure performing a function in virtue of its component parts, component operations, and their organization” (Krakauer et al. 2017), that definition is predicated on the existence of an underlying structure, or form and in at least one domain of physical science, we have a phenomenon which has no
physical structure, but only an abstract, mathematical form: gravitation. Unless we adopt a Platonist or Pythagorean ontology, where mathematical forms really exist and are the forms -- the structures -- we are talking about when we refer to “a structure performing a function” then in the mechanical philosophy the relation of form (the abstract, mathematical description) to content (a form’s referent in the extended world) is simply unintelligible. There is no way to understand what gravity “is” by understanding Newton’s (or Einstein’s) laws. “It’s common these days to ridicule the Cartesian idea of the ‘ghost in the machine’ -- the mind is a ghost inside the machine -- but that’s misunderstanding. What was exorcised was the machine, not the ghost. The ghost stayed where it was,” (Chomsky, 22:40-22:55, 1998). Chomsky was therefore skeptical that we will ever know what the creative aspect of language use is, as its qualities are quite mysterious. He writes, “we do not understand, and for all we know, we may never come to understand what makes it possible for a normal human intelligence to use language as an instrument for the free expression of thought and feeling,” (Chomsky, 424, 1982).

**Mechanical Form and Meaningful Content**

If we accept its existence and characterization, it should be clear that the creative aspect of language should figure prominently in a semantic theory of natural language. Chomsky is broadly sympathetic with a use theory of meaning (defined below), for reasons that should be clear -- the undetermined nature of the creative principle (cf. 1.3, above), its freedom, cannot come from the structure of language in the technical sense in which Chomsky uses the term “language”. In transformational generative grammar, a language is a “set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements,” (Chomsky, 13, 1957). It therefore has a determinate form. The goal of transformational generative grammar is
to develop “an abstract theory of linguistic structure [within] a framework that admits of
operational interpretation,” and to show how “such a theory can lead to a practical mechanical
procedure by which, given a corpus of linguistic material, various proposed grammars can be
compared and the best of them selected,” (Chomsky, 61, 1975). Chomsky takes a realist position
in his work, “that the procedural theories [he] was attempting to refine, extend, and correct did
make an empirical claim. A grammar determined by a linguistic theory (given data) constitutes a
hypothesis concerning the speaker-hearer’s knowledge of his language and is to be confirmed or
disconfirmed in terms of empirical evidence drawn, ultimately, from investigation of the
linguistic intuitions of the language-user,” (Chomsky, 37, 1975). This may sound like a
mechanical theory of mind, if the speaker-hearer’s “knowledge of his language” could be
represented with an algorithmic interpretation for encoding the meaning of various words in
linguistic structure. Not on Chomsky’s account. “For a competence system, a generative system
like language there’s no algorithm. And nothing is being done. It is just a characterization of an
infinite set [of sentences]. Finite characterization of an infinite set,” (Chomsky, 13:58-14:12,
2013). Therefore, while the tool, the language has a determinate form and structure, that does not
mean that the mind works by mechanical principles. “Insofar as [transformational generative
grammar] succeeds in [its] aim,” which is, to characterize the “nature of a person’s knowledge of
his language… that enables him to make use of language in the normal creative fashion”
Chomsky writes that “we have an account of the mechanisms that enter into the [creative aspect
of language use]” (Chomsky, 424-5, 1982, emphasis added). Therefore, the more clearly we can
articulate the formal and mechanical aspects of our minds, the more deeply we may come to
understand the creative and free aspect.
As we will see in §2: *The Nature of Semantic Theory*, the use theory of meaning is an under-investigated and largely misunderstood possibility for cognitive science. This is partly due to the elusive nature of these topics. The use theory of meaning was best articulated by Ludwig Wittgenstein, whose work is “unfashionable” and “little understood” according to the Internet Encyclopedia of Philosophy (Richter, 2017).

2. **Use theory of meaning** = df “For a *large* class of cases—though not for all—in which we employ the word “meaning” it can be defined thus: the meaning of a word is its use in the language,” (Wittgenstein, *PI* §43, 1953)

To give an illustration of the character of a use theory of meaning -- as it is not antecedently clear -- there’s an old legend floating around that Piero Sraffa once flipped Ludwig Wittgenstein the bird and chided him: “what’s the logical form of *this*?” at which Wittgenstein, dumbfounded (there being no answer he could point to in his *Tractatus*), realized that *meaning* -- in whatever form it arises; words, apocryphal middle fingers, etc. -- is *how that form is used to create content*. This is a metaphorical elaboration on Chomsky’s characterization of the creative aspect of language use, but as Nietzsche said, better than I ever could, “the artistic process of metaphor formation with which every sensation begins in us already presupposes these forms and thus occurs within them. The only way in which the possibility of subsequently constructing a new conceptual edifice from metaphors themselves can be explained is by the firm persistence of these original forms,” (Nietzsche, 7, 1873).

The motivation behind bringing the philosophies of Chomsky and Wittgenstein together is that on the one hand, Chomsky created a formal theory of linguistic structure, the
transformational generative grammar, *wherein content, or meaning, plays no role*, and on the other hand, Wittgenstein develops a method for learning the *use* of words that *cannot by its very nature be formalized*. In §23 of the *Philosophical Investigations*, Wittgenstein’s interlocutor asks “But how many kinds of sentences are there?” to which he responds “There are *countless* kinds… and this multiplicity is not something fixed, given once and for all; but new types of language, new language-games as we may say, come into existence and others become obsolete and forgotten. (We can get a *rough picture* of this from the changes in mathematics.)” (Wittgenstein, 1951). Reading Chomsky and Wittgenstein together, we can learn how to use *form and content* in the study of natural language and thereby, cognitive science. The philosophies of Chomsky and Wittgenstein are like a Rorschach test -- but not in the pejorative sense with which Chomsky criticized Skinner -- rather, it is just as important to look at the positive space as the negative to see what is said and what is passed over in silence. In the next section, we will investigate the possibilities for a semantic theory of natural language. Chomsky’s silence on the issue will speak volumes.
II. The Nature of Semantic Theory

A semantic theory of a natural language is a theory of concepts. This isn’t an analytic truth, as we’ll soon see, but we can use it like one. Semantics is the study of meaning and reference in natural language. Thus, it is a study of the relation between the mind and the world. Concepts are the constituents of thought, and depending on one’s philosophical orientation, ontology, etc., concepts may be characterized as more or less identical to the constituents of natural language (Margolis and Laurence, 2014). A theory of concepts may be broader than a theory of language; however, in the domain of semantics, where we are concerned with how constituents of thought or language acquire meaning, we can treat concepts and natural language together.

Concepts have aspects. Concepts have a phenomenal aspect. Phenomenal consciousness is the subjective “what it is like” aspect of certain mental states (Nagel, 1974). There is always an experience which accompanies the use of concepts (though not necessarily the same experience). Thus a theory of concepts is closely tied to a theory of consciousness (cf. §3). Concepts have an intentional aspect. Intentionality is the ability of certain mental states to “represent” or “be about” some aspect of the world (Jacob, 2014). On Franz Brentano’s classic characterization:

“Every mental phenomenon includes something as object within itself, although they do not do so in the same way. In presentation, something is presented, in judgment something is affirmed or denied, in love loved, in hate hated, in desire desired and so on.
This intentional inexistence is characteristic exclusively of mental phenomena,”
(Brentano, 88-9, 1874).

Concepts have a generative aspect. The concepts yellow and elephant can be combined to generate the concept yellow elephant. However, there are semantic constraints on the generativity of concepts. It is harder to know what is meant by elephant yellow than yellow elephant. Is elephant yellow a shade of yellow? Is it a yellow which has some otherwise ineffable “elephantness” about it?

With all of these considerations, it should come as no surprise that a science of concepts hasn’t been achieved. Having argued against the ideas, in §1, that the world is ultimately mechanical and intelligible to human understanding, we see there is no a priori reason why each of the different aspects of concepts should be formalizable within the same framework. But a long-standing intuition, what Fodor et al. (1980) call “the standard picture” is that they must be. More precisely, “the standard picture” or TSP is that morphemes, the meaningful constituents of a language, (which are, in our formulation a subset of concepts) must have a “definitional structure” at the semantic level, an internal, determinate form whereby they can be combined to generate content (Fodor et al., 1980). The CCTM+RTM (classical computational theory of mind + representational theory of mind) advocated by (Fodor 1975), which views the human mind as a systematic, symbolic system that operates like a Turing machine over symbols in a mental language (commonly called mentalese) dominated the field of cognitive science for decades, and most CCTM+RTM models have been predicated on the definitional, standard picture articulated by Fodor et al. (1980) (Rescorla, 2015). Connectionism and embodied cognition approaches, by and large, are premised on the same assumption outlined above and adopted by the
CCTM+RTM: each of the different aspects of concepts should be formalizable within the same framework because concepts have internal, semantic structures whereby they are related to one another -- there is little functional difference between CCTM+RTM and connectionist or embodied approaches. We’ll return to the anti-definitional account of natural language in §3. For our present purposes, it is enough to sketch the general terrain and point out the intuition behind formal theories of concepts and natural language: concepts have a structural/relational aspect, which encompasses their logical relations to one another and their ability to be used for production of new thoughts and knowledge. This is the same misunderstanding we observed of the interpreters of Isaac Newton and René Descartes in §1: the bait and switch of form for content. In his formulations (1957, 1965, 1975) of transformational generative grammar, Chomsky makes no such error. It will thus be our starting point for our discussion of the content of natural languages and a semantic theory of natural language.

Origins and Scope of Transformational Generative Grammar

In spite of innumerable advances in formal semantics, mathematical logic, and computer science over the last half a century, the semantic theory of natural language remains as mysterious today as it was when Jerrold Katz attempted an articulation of its general character in 1966. Katz’ project was to model the semantic component of a transformational generative grammar on the highly successful model of the syntactic component formulated by Noam Chomsky (1955, 1957, 1965). “A grammar of a particular language can be considered… to be a complete scientific theory of a particular subject matter, and if given in precise enough form, a formalized theory,” (Chomsky, 77, 1975). Katz’ definition of grammar is identical to the one
offered by Chomsky:

1. “A grammar contains a syntactic component, a semantic component, and a phonological component.
   
   1.1. The latter two are purely interpretive; they play no part in the recursive generation of sentence structures.
   
   1.2. The syntactic component consists of a base and a transformational component.
   
   1.3. The base, in turn, consists of a categorical subcomponent and a lexicon.
   
   1.4. The base generates deep structures.
   
   1.5. A deep structure enters the semantic component and receives a semantic interpretation;
   
   1.6. [a deep structure] is mapped by the transformation rules into a surface structure, which is then given a phonetic interpretation by the rules of the phonological component,” (Chomsky, 141, 1965).

We will explicate Katz’ attempt at a characterization of the semantic component shortly, but first, it’s important to understand that the generative linguists who emerged from the 2nd Cognitive Revolution\(^3\) of the 1950s and 1960s were chiefly concerned with constructing a theory of language that was, in many ways, a “revival of the traditional rationalistic theory of *universal grammar,*” (Katz, 125, 1966). A universal grammar is a specification of a class of grammars where the linguistic universals are constraints on the form of each component of a grammar

\(^{3}\) (cf. Chomsky 1998)
(Katz, 126, 1966). There are three types of linguistic universal: formal, substantive, and organizational. “Formal universals constrain the form of the rules in a grammar; substantive universals provide a theoretical vocabulary from which the constructs used to formulate the rules of particular grammars are drawn; organizational universals… specify the interrelations among the rules and among systems of rules within a grammar,” (Katz, 126, 1966). The existence of the theoretical construct we will call a universal grammar provides a plausible account of a very interesting and well-delineated empirical problem. Attempts to prove the existence of such a grammar and articulate some of its essential properties fueled much of the work in the generative tradition. The questions Chomsky and his colleagues (including Jerrold Katz and Jerry Fodor) asked were:

How is it that “on the basis of [a] finite linguistic experience,” the mature speaker of a language “can produce an indefinite number of new utterances which are immediately acceptable to his speech community”? Furthermore, how is it that such a speaker can “distinguish a certain set of ‘grammatical’ utterances, among utterances he has never heard and might never produce”? (Chomsky, 61, 1975).

The only conceivable solution, on the generativist account, was to posit the existence of an innate structure in the mind into which a corpus of data could be submitted -- one’s finite linguistic experience -- and through some set of recursively enumerable rules, transform the data into a highly organized, abstract, and systematic representation of the mature organism’s knowledge of their language. Chomsky formalized generative grammar during his doctoral work from 1951-1955, in a tome called The Logical Structure of Linguistic Theory [hereafter: LSLT] which was published in 1975. “LSLT is an attempt to develop a theory of transformational
generative grammar. The ‘realist interpretation’ of linguistic theory is assumed throughout, and it is argued that the competence attained by the normal speaker-hearer is represented by a transformational generative grammar, which determines the representation of each sentence on the levels of phrase structure and transformational structure (inter alia),” (Chomsky, 45, 1975).

Importantly for Chomsky, the study of syntax (linguistic form) is completely separable from the study of linguistic meaning, use, and reference. “No reliance is placed on the meaning of linguistic expressions in this study, in part, because it is felt that the theory of meaning fails to meet certain minimum requirements of objectivity and operational verifiability, but more importantly, because semantic notions, if taken seriously, appear to be quite irrelevant to the problems being investigated here,” (Chomsky, ii, 1955). The linguistic theory Chomsky was attempting to formulate is a theory of linguistic competence, as distinct from linguistic performance. Chomsky was interested in the mental mechanisms which make possible (but do not constitute) the creative, free expression of thought. Katz and Chomsky thus have very different goals concerning the naturalizability of the mind -- which is to say, the degree to which a formal, mechanistic theory could be used to represent the nature of the mind. “Fodor and Katz undertook the first systematic effort to develop a theory that would relate questions of meaning to transformational generative grammar… Katz has been the clearest advocate of the view that linguistic theory provides a system for representation of meaning… my own view is more skeptical,” (Chomsky, 22-3, 1975). Chomsky writes in LSLT, “I have argued that the appeal to meaning in the determination of grammatical structure is actually a misnomer for the appeal to intuition, and hence is to be avoided. But it is important to distinguish sharply between the appeal to meaning and the study of meaning. The latter is an essential task for linguistics. It is
certainly important to find some way of describing language in use. But this is not the study of grammatical structure,” (Chomsky, 96-7, 1975). These “intuitions about linguistic form” -- which are largely constitutive of the knowledge a mature speaker of a language possesses -- define the “grammatical” sentences of a language (Chomsky, 62, 1975). In a generative grammar, “the grammar must generate a set of grammatical sentences on the basis of a limited corpus: Is it correct to identify ‘grammaticalness’ with ‘significance’? I think that it is not. If we take ‘meaningfulness’ or ‘significance’ seriously, I think we must admit that

(i) colorless green ideas sleep furiously

is thoroughly meaningless and nonsignificant, but it seems to me that as a speaker of English, I would regard this as a ‘grammatical’ sentence,” (Chomsky, 94, 1975). Compare the above example with the following sentence:

(ii) revolutionary new ideas appear infrequently (Chomsky, 149, 1965). How would meaning or reference, as a criterion of grammaticality, manage to include both (i) and (ii) in a grammar of a natural language? Taking meaning seriously, as we will in this essay, requires a broader conception of meaning and the mind than is available to us if we allow meaning to figure in the theory of linguistic structure at all. Therefore, Katz’ project of naturalizing and thereby mechanizing the semantic component of grammar is a far more ambitious characterization of universal grammar than Chomsky attempted. While Katz does not develop the mechanics of the semantic component in detail, the general direction is a formal, mechanistic approach to meaning. Chomsky was “vague about the notion ‘semantic representation’” in his Syntactic Structures (1957) and Logical Structure of Linguistic Theory (1955, pub. 1975) because a “use theory of meaning’ was implicit” in those works (Chomsky, 22, 1975). This is in agreement with
the later Wittgenstein (cf. §§1,3). Katz adopts what we will call an idea theory of meaning:

2. **Idea theory of meaning** = \( df \) A semantic theory is an idea theory of meaning iff the only factors which determine the meaning of a concept are the contents of mental representations.

The motivation for this type of approach to meaning in the study of human language comes from two parallel observations: 1) “most elementary syntactical components of a sentence [morphemes] are, in general, meaningful units of the language,” and 2) “since higher level syntactic constituents are formed out of them, it is reasonable to think that the meaning of higher level syntactic constituents comes from the meanings of their component morphemes,” (Katz, 130, 1966). In other words, the meaning of a sentence is a compositional function of the meanings of its constituents, modulated in whatsoever way the rules of the semantic component organize grammatical morphemes (which “are rare and devoid of meaning”) and nongrammatical morphemes, “each of which bears some fixed conceptual interpretation,” (Katz, 130, 1966). More completely, Katz recognizes that somehow, the semantic component of a grammar must relate to the mechanistic syntactic component and he posits *a priori* that a semantic theory will be seamlessly incorporated into a more powerful formal system that takes account of all three components of grammar: it would be a (rather idealistic) broad conception of a universal grammar.
On the General Character of Semantic Theory

Jerrold Katz joined Noam Chomsky as a research associate at the Massachusetts Institute of Technology in 1961 and was deeply inspired by the approach to linguistic theory offered by transformational generative grammar. Chomsky had succeeded in constructing a representational scheme for sentence structure, and Katz took as the goal for semantic theory “the problem of constructing a universal scheme for semantic representation,” (Katz, 128, 1966). To this end, Katz outlined four features a semantic theory must contain:

3. Katz’ model of the semantic component of transformational generative grammar:
   3.1 “A scheme for semantic representation consisting of a theoretical vocabulary from which semantic constructs required in the formulation of particular semantic interpretations can be drawn;
   3.2 A specification of the form of the dictionary and a specification of the form of the rules that project semantic representations for complex syntactic constituents from the dictionary’s representations of the senses of their minimal syntactic parts;
   3.3 A specification of the form of the semantic component, of the relation between the dictionary and the project rules, and of the manner in which these rules apply in assigning semantic representations;
   3.4 A set of definitions for semantic properties and relations such as synonymy, antonymy, ambiguity, presupposition, analytic truth and contradictoriness,” (Katz, 128-9, 1966).
There are major challenges for Katz’ formal approach. Even if one accepts Chomsky’s characterization of the syntactic component of language, and even if one accepts Chomsky’s characterization of the relations between the syntactic, semantic and phonological components, there is no *a priori* reason why the three components should be coherently interrelatable in a formal system. The “rationalist revival” of transformational generative grammar must be truly rational and account for what can and cannot legitimately be innately known. Chomsky, ever the optimist, wrote that “various formal devices for expressing [the conserved semantic similarity across transformational analysis] suggest themselves, but the general problem seems to me non-trivial.” (Chomsky, 163, 1965). We will see from our discussion of the creative aspect of language use in §3 that the move toward a formal theory of semantics of natural language is incompatible with a truly rationalist characterization of universal grammar and human freedom. In his mechanical framework Katz develops a set of preliminary definitions of some semantic properties and relations, the most useful for our discussion will be synonymy, analyticity, and syntheticity (Katz, 143, 144, and 147, respectively, 1966):

4. A constituent\(^4\) \(C_i\) is *synonymous* with another constituent \(C_j\) on a sense\(^5\) just in case they have a reading\(^6\) in common (Katz, 143, 1966)

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\(^4\) Where a constituent is any meaningful unit of a language (i.e., morpheme, word, clause, etc.)

\(^5\) (cf. Katz, 131, 1966): “We shall use the term *sense* in its customary usage to refer to one of the different meanings which a morpheme (or expression) may bear and reserve the term *meaning* for the collection of senses that a morpheme (or expression) has.”

\(^6\) (cf. Katz, 132, 1966): “We use the term *reading* to refer to a semantic representation of a sense of a morpheme, word, phrase, clause, or sentence.”
5. S is **analytic** on a reading $R_{1,2}$ if and only if every noncomplex semantic marker in $R_2$ occurs in $R_1$ and for any complex semantic marker $((M_1)\lor(M_2)\lor\ldots\lor(M_n))$ in $R_2$ there is an $(M_i), 1 \leq i \leq n$, in $R_1$ (Katz, 144, 1966).

6. S is **synthetic** on a sense if and only if there is a reading $R_{1,2}$ assigned to S’s sentence constituent such that S is neither analytic nor contradictory on $R_{1,2}$ (Katz, 147, 1966).

This characterization of semantic theory was subjected to a pointed critique by Hilary Putnam, who argued that Katz had merely translated “into ‘mathematical’ language” the traditional theory of meaning, which, on his account, radically falsifies the properties of natural kind words, such as “lemon” (Putnam, 193; 187, 1970). Here we define the traditional theory of meaning in “mathematical language” (perhaps to the chagrin of Putnam, perhaps to the chagrin of Katz):

7. **Traditional theory of meaning** = $df$

A semantic theory is traditional iff

$$\sum_{n=1}^{n} p_n = C$$

where C is a concept, and

$P_1, \ldots, P_n$ are properties of C.

If we accept (7) then, Putnam tells us, regarding the concept lemon, “for each of these properties, the statement ‘lemons have the property P’ is an analytic truth”; and if $P_1, P_2, \ldots, P_n$, are all of the properties in the conjunction, then ‘anything with all of the properties $P_1, \ldots, P_n$, is a lemon’ is likewise an analytic truth,” (Putnam, 187, 1970). Katz would agree thus far. As we saw in (5),

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7 See (10) below.
where $R_2(\text{lemon}) = \{P_1...P_{x-1}\}$ and $R_1(\text{lemon}) = \{P_1...P_{x}\}$, then the sentence $S = \text{“Lemons have the property } P_x\text{”}$ is analytic. All we have to do, on Putnam’s account is postulate the property of being a lemon = $P_x$ (Putnam, 188, 1970). However, this is a trivial, ad hoc characterization of a lemon. Suppose we want a semantic theory of the kind Katz is suggesting: one would expect that it could generate, akin to Chomsky’s syntactic theory, a set of all the meaningful sentences of a natural language -- and give us a mechanism for finding their meanings! We’d be able to use the semantic theory to get the properties (the conjunction of which constitutes the meaning) of a lemon in advance of ever having seen or heard of a lemon. This is prima facie insane and a radical nativist position… but as Putnam reminds us, “it is all too customary to waive [the requirement of sanity]” when doing philosophy (Putnam, 191, 1970). For Putnam, the problem is that “natural kind” terms like lemon refer to objects in the world whose essence is unknown to us (if there is such a thing), and we may be wrong about which properties should be conjoined in a definition (and definitions are, on the standard picture, a requirement for a formalizable theory of meaning). Putnam considers the case in which we think the normal members of the natural kind lemon are the tart, yellow ones, but in fact the normal members are blue; thus our theory of the natural kind lemon is false and we have radically falsified the meaning of lemon by assigning it the semantic marker “yellow”. Putnam also considers the case where the characteristics which we choose as defining some natural kind, like lemon changes over time, consistent with the theory of evolution, (Putnam, 190-1, 1970). “The mistake is in trying to represent the complex behaviour of a natural kind word in something as simple as an analytic definition,” (Putnam, 192, 1970). A mechanistic theory of meaning of the kind Katz advocates would entail that “every word that human beings have invented or could
invent has an analytic definition,” in the representational language of thought (Putnam, 194, 1970). However, this isn’t to say that the notion of “semantic representation” is meaningless or that semantics is necessarily futile -- Putnam asks us to consider what is actually involved in the communication of the meaning of a term. He endorses a position called semantic externalism:

8. **Semantic externalism** = **df** The meaning of some (or all) words is not determined solely by the contents of mental representations or “intension” but also by the word’s extension (the set of objects in the world to which the word refers).

The intent behind this theory is to empirically characterize what Putnam calls “core facts” about language use, (Putnam, 197, 1970). “The hypothesis is that there are, in connection with almost any word (not just “natural kind” words), certain core facts such that (1) one cannot convey the normal use of the word (to the satisfaction of native speakers) without conveying those core facts, and (2) in the case of many words and many speakers, conveying those core facts is sufficient to convey at least an approximation to the normal use,” (Putnam, 197, 1970). Putnam cautions that it may not be appropriate to call this a theory of meaning. However, it is empirically tractable, as one could test (in principle) what kinds of facts, in what kinds of situations, would enable a normal language learner to understand the use of a word.

**Understanding and Analyticity**

Largely due to a misunderstanding of Chomsky’s transformational generative grammar, a hybrid traditional/idea theory of meaning is the common sense of most working neuroscientists
and cognitive scientists today, and there is very little interest or research in use theories of meaning. Katz doesn’t misunderstand Chomsky; he simply believes, as Putnam put it, that “a mechanical scheme can be given for translating any natural language into [an] artificial ‘marker language’ (and this scheme is just what Katz’ semantic theory is)” (Putnam, 194, 1970).

Semantic markers, which constitute the “marker language” Putnam references, are the theoretical constructs which the semantic component constructs from representing the underlying phrase markers or deep structure of a sentence in terms of the vocabulary in the dictionary (see above). Chomsky writes “generative grammar is not a model for a speaker or hearer. It attempts to characterize in the most neutral possible terms the knowledge of the language that provides the basis for actual use of language by a speaker-hearer,” (Chomsky, 9, 1965, emphasis added).

Conflation of model and reality, form and content, has led neuroscientists, following Katz, to the conclusion that meaning must be in the head.

Further problems arise for formal and traditional/idea approaches toward semantics of natural languages with Quine’s critique of analyticity (1951). Katz’ hybrid traditional/idea theory of meaning (hereafter: semantic internalism) is particularly weak against the circularity critique that Quine raises against the analytic/synthetic distinction. Katz defines a synthetic sentence in (6) by contrast with the definitions of analyticity and contradictoriness. In that way, Katz is a rationalist to the very last. The empiricist approach, as we will see, will fare little better, but the critique Quine raises in defense of a pragmatic empiricism is a powerful critique of the rationalist approach taken by Katz.

Quine argues that there is no meaningful distinction between analytic and synthetic statements (Quine, 1951).
9. **Analyticity** = \( df \)  
“A statement is true by virtue of meanings and independently of matter of fact,” (Quine, 153, 1951).

10. **Syntheticity** = \( df \)  
A statement is synthetic if and only if it is true and not analytic.

That such a distinction exists is the first dogma of empiricism. As we’ll see, Quine argues it’s not possible to define analyticity in a non-circular way. It is interesting to note that Katz attempted a preliminary definition of synthetic statements in semantic theory (6), given his rationalist commitments. If Putnam’s characterization of Katz’ theory is correct -- namely that “every word that human beings have invented or could invent,” would have an analytic definition in the semantic marker language, there is no reason to posit synthetic statements as a category, because the human language faculty would have an analytic definition for any sentence it could generate, and thus an understanding of the meaning of any sentence a human could think -- all meanings would be innate and no synthetic statements would be possible (Putnam, 194, 1970). But I digress.

Quine begins by arguing against our traditional notion of meaning (7), writing that we tend to confuse meaning with *naming*. “The terms ‘9’ and ‘the number of the planets’ name one and the same abstract entity but presumably must be regarded as unlike in meaning,” (Quine, 153, 1951, emphasis added). This confusion, Quine believes, derives from the Aristotelian tradition and doctrine of essentialism: “Meaning is what essence becomes when it is divorced from the object of reference and wedded to the word” (Quine, 154, 1951). After this division of reference and meaning, given that “only linguistic forms have meaning” for Quine, there is the
possibility that we can abandon the idea of a reified “meaning” as an “obscure intermediary entity” between synonymous linguistic forms and the analyticity of statements (Quine, 154, 1951). Chomsky would vehemently disagree -- partially because they are speaking in cross-purposes (Quine is a committed behaviorist and Chomsky a committed cognitivist) -- but also because of a difference in the use of the terms “linguistic form” and “meaning”: for Chomsky form is uninterpreted structure; for Quine form is the only place where meaning could lie (if such a thing were to exist) because as a behaviorist there is no fact of the matter beyond the relation of stimulus to behavior.

Quine asserts a usage theory of synonymy, similar in flavor to the Wittgensteinian use theory of meaning (cf. §§1,3) (as, after all, the “primary business” of the theory of meaning is now the empirical elucidation of synonymy relations). He claims “definition rests on synonymy” because the dictionary definition of a word, the empirical task of the lexicographer, reflects “antecedent facts” about the usage of words in the world. All definition, in Quine’s view, is empirical and “hinges on prior relations of synonymy,” even the advanced formalisms of mathematics and logic (Quine, 157, 1951). From this point, Quine approaches the problem of synonymy in the feign hope of finding a foundation for analyticity. He constructs an “extensional language” where “any two predicates which agree extensionally (that is, are true of the same objects) are interchangeable salva veritate,” which is to say, interchangeable while conserving the truth-value between them. The motivation for this is, simply, that he needs “an account of cognitive synonymy not presupposing analyticity,” to escape the circularity that comes from using dictionary or other definitions to make sense of analyticity (Quine, 158, 1951). He shows that the interchangeability of two predicates in this language cannot demonstrate the analyticity
of a given statement, but merely its truth (Quine, 159, 1951). “There is no assurance here that the extensional agreement of ‘bachelor’ and ‘unmarried man’ rests on meaning rather than merely on accidental matters of fact, as does the extensional agreement of ‘creature with a heart’ and ‘creature with a kidney’ (Quine, 159, 1951). There is no way for Quine to distinguish between the meaning of a true statement and “accidental matters of fact” if meaning comes from usage (Quine, 159, 1951). He writes, “I do not know whether the statement ‘Everything green is extended’ is analytic,” because he has no way to know whether it is simply a matter of fact of our universe that all green items appear in physical space, and are thus extended, or whether there is something intrinsic in greenness which makes it the case that everything green is extended, (Quine, 160, 1951). If a formal semantic theory of the kind Katz proffered were true, there would be an entity which we could point to to determine the matter: the sets of semantic markers associated with green and extension, and whether on every reading of every sentence involving either of those words, some subset of semantic markers appeared in every semantic representation (cf. Katz, 144, 1966). Even within a precise formal language with clearly defined semantical rules, analyticity is circularly defined:

“Let us suppose, to begin with, an artificial language \( L_0 \) whose semantical rules have the form explicitly of a specification, by recursion or otherwise, of all the analytic statements of \( L_0 \)… before we can understand a rule which begins ‘A statement \( S \) is analytic for language \( L_0 \) if and only if…’ we must understand the general relative term ‘analytic for’; we must understand ‘\( S \) is analytic for \( L \)’ where ‘\( S \)’ and ‘\( L \)’ are variables,” (Quine, 161, 1951).
Here Quine has pointed out that we must, in some sense, know the word “analytic” to formulate these rules at all; hopefully semantical rules of the second type will help us understand this mysterious word “analytic”:

“A semantical rule of this second type, a rule of truth… stipulates, recursively or otherwise, a certain multitude of statements which, along with others unspecified, are to count as true… derivatively, afterward, analyticity can be demarcated thus: a statement is analytic if it is (not merely true but) true according to the semantical rule,” (Quine, 161, 1951).

This again would be circular, Quine argues, for if the rules specified all of the sentences of the language which are to count as analytic, it presupposes a prior understanding of “analytic” or, in the second case, to a prior understand of the term “semantical rule” (Quine, 161, 1951). This is similar in flavor to Wittgenstein’s rule-following paradox, which we will discuss in §3, and it is interesting to note that Katz traditional/idea theory of meaning has a powerful reply: the realist interpretation of the semantic marker theory. If semantic markers could determine meaning by some strange process in some strange medium, the problem of rule-following and the circularity of analyticity could be avoided -- they wouldn’t arise at all, because the process of semantic “interpretation” would be a combinatorial, mathematical process akin to syntactic structuring.

This brings us to the second dogma of empiricism: the meaning of any statement is finally reducible to some logical construction out of sense-data (Quine, 1951). A survival of the logical positivistic wave that swept early 20th century analytic philosophy, the verification theory of meaning is a last-ditch effort at a notion of analyticity, as it would attempt to reduce
sense-data to some set of logical primitives, the relations between them, and show how, by virtue of having a certain experience of sense-data -- say the sense-data of a narrow band of electromagnetic radiation emanating from the surface of a small, tart fruit -- we could have an analytic truth of the form: a lemon is yellow. Quine (1951) dismantled the verification theory of meaning by turning it back on its head:

11. **Verification theory of meaning** = \( df \) “The meaning of a statement is the method of confirming or dis-confirming it,” (Quine, 163, 1951).

Quine asks: what method would one use to verify the verification theory of meaning? What empirical method would confirm or disconfirm it? “What, in other words, is the nature of the relation between a statement and the experiences which contribute to or detract from its confirmation?” (Quine, 164, 1951). As stated, (11) is internally incoherent. Given these considerations, Quine suggests a move toward pragmatism toward meaning, and suggests that the entities posited by natural science are different, merely in degree, and not in kind, from the Gods of Homer or the conceptual intermediary of meaning (Quine, 167, 1951). Should we accept Quine’s pessimism and abandon the concept of meaning altogether? Putnam finds Quine’s pessimism persuasive, writing “we cannot assume that there is a scientific subject [of semantic theory] to be constructed here just because ordinary people have occasion to use the word ‘meaning’ from time to time,” (Putnam, 195, 1970). Putnam’s rejoinder, as we saw earlier, was semantic externalism (8). However, this approach isn’t satisfying on the realist interpretation of transformational generative grammar. “In LSLT, the ‘realist’ position is taken for granted. That is, [Chomsky] assumed that the procedural theories [he] was attempting to refine, extend,
and correct did make an empirical claim. A grammar determined by a linguistic theory (given data) constitutes a hypothesis concerning the speaker-hearer’s knowledge of his language and is to be confirmed or disconfirmed in terms of empirical evidence drawn, ultimately, from investigation of the linguistic intuitions of the language-user.” (Chomsky, 37, 1975). If the mechanisms of transformational generative grammar represent the linguistic knowledge of a language-user, then we want an account of how that knowledge is put to use in a theory of semantics of natural languages; without such a theory, the relation of form to content remains unintelligible in the study of natural language. It may be that the true theory is unintelligible, but then, it could hardly be called a theory! Putnam concedes that “a general and precise theory which answers the questions (1) Why do words have the different sorts of functions they do? and (2) Exactly how does conveying core facts enable one to learn the use of a word? is not to be expected until one has a general and precise model of a language-user; and that is still a long way off,” (Putnam, 201, 1970).

A long way off indeed. Giving up on the mechanical philosophy means giving up on a “general and precise model of a language-user”. How can we go on? Jerry Fodor reminds us, “the true theory doesn’t have to be boring,” in his anti-definitional, nativist account of CCTM+RTM (Fodor et al. 1980). Such an approach could address some of the circularity challenges Quine raises and account for the empirical problem Putnam outlines -- the core facts necessary to the conveyance of use -- in a manner which can accommodate the realist interpretation of linguistic theory and the creative aspect of language use. In the finale of the next section, we will triangulate between the philosophical approaches of Wittgenstein, Chomsky and Fodor and argue for a conception of the mind where the different aspects of concepts are
integrated into “core facts” of the kind Putnam suggests. We will first use Waldron and Spackman’s Buddhist critiques of essentialism to gain an ontological and epistemic perspective on discussion, and clear away the confusion that Drach (1981) presents in her account of Chomsky’s use of the notion “creative aspect of language use.” In our reconstruction of the creative aspect of language use from the ashes of Cartesian Dualism and the mechanical philosophy, we must not make the mistake of confusing *form* and *content*. We therefore will not posit substances or essences for the process of language use (creativity) or for language itself (even though it may have a determinate form, a determinate syntax).
III. The Creative Aspect of Language Use

The Story So Far

We began this essay with Fodor’s polemic against consciousness studies and suggested that the creative aspect of language use posed an equally mysterious obstacle to cognitive scientists interested in understanding the human mind. We investigated why that may be, and found that an incoherent or unintelligible formulation of the nature of the Universe, the mechanical philosophy, had stunted understanding on a misreading of Descartes and Newton. The mechanical philosophy was unintelligible because the relation of form to content, the mathematical description of the world to its physical realization, was unintelligible. It was incoherent because it insists, *in spite of this unintelligibility*, that the world *is* a mechanism that works by virtue of structure and the organization of structure. We showed how the mechanical philosophy is the basic intellectual framework of some of the most “anti-reductionist” neuroscientists today (Krakauer et al., 2017) and suggested that understanding Chomsky and Wittgenstein could move cognitive and neuroscience in a more productive direction toward the investigation of the creative aspect of language use. To make our discussion in this section intelligible and dispel worries that a mechanistic grammar of the kind formulated by Chomsky implied a mechanistic theory of mind, we studied Jerrold Katz’ formulation of the character of semantic theory in contrast to Chomsky and Wittgenstein’s idea of meaning as *use*. Putnam’s critique of Katz’ project and Quine’s dissolution of the analytic/synthetic distinction argued that the traditional/idea theories of meaning were built on a flimsy foundation, and as Descartes reminds us, “the destruction of the foundations of necessity brings with it the downfall of the rest
of the edifice,” (Descartes, 6-7, 1641). Now we will discuss the nature of the creative aspect of language use.

**Chomsky vs. Drach on the Creative Aspect of Language Use**

As we build toward an understanding of the nature of the creative aspect of language use, it will be helpful to understand exactly what Chomsky has said about it and how the idea has been misinterpreted. In one famous example, Drach (1981) grossly misreads Chomsky and claims that in his writings on the creative aspect of language use “there are two contradictory facets to his writings” which Drach calls the “oscillation between reducing language to whatever can be accounted for by the grammar and enrolling it in his glorification of human creativity,” (Drach, 63 & 62, 1981). Drach’s confusion will be helpful for us to consider more precisely what the instrument of language is and how it could be put to creative use in the making of meaning.

Drach “had gotten the impression from Chomsky’s writings over the years -- and [she] thought [she] wasn’t alone -- that there was some very basic and revealing link between what was being done in transformational linguistics and the ‘creative aspect of language use,’; that the latter was (or should be) somehow very intimately related to the concerns of linguistics,” so she was “somewhat [startled]” when reading Chomsky, that he thought the creative aspect of language use “remains as much a mystery to us as it was to the Cartesians who discussed it, in part, in the context of the problem of ‘other minds’” (Drach, 45, 1981). Drach claims Chomsky vacillates on whether creativity is a part of competence -- which is as we discussed above, the domain of transformational generative grammar -- or, performance: linguistic behavior. “If language is what Chomsky says it is -- something that is accounted for in toto by the rules of transformational grammar -- and if the [creative aspect of language use] is as he describes it, then
the [creative aspect of language use] is really the creativity of human behavior, involving the use of language as a quasi-extraneous instrument with which one performs creatively, but with no glory thereby devolving to language. Alternatively, if language is to play more than such a role in the [creative aspect of language use], ‘provide the means’ for it, in the true sense, then it has to be more than what Chomsky says it is. He wants the glory of the [creative aspect of language use] to reverberate on language, but at the same time, by defining, or describing (or confining or circumscribing) language as he has, he has made this impossible,” (Drach, 61. 1981). Drach accuses Chomsky of having performed a “prestidigitation trick” and thereby sympathizes with linguists who have confused “the creative aspect of language use’ with the recursive property of generative grammars,” even though Chomsky insists they are quite different matters (Drach, 57, 1981). Furthermore, Drach ascribes a rather insidious intent to Chomsky for this “trick” of the same kind leveled at Descartes, who was held to have formulated his doctrine of substance dualism to account for the truths of religion. Drach’s goal in *The Creative Aspect of Chomsky’s Notion of Creativity* is to see if “a single, consistent picture emerges of what the [creative aspect of language use] is and how it relates to transformation linguistics,” given that the concept seemed to have “run its course, having more than done the job it was called upon to do -- gather countless repentant behaviorists to the Chomskyan fold,” (Drach, 46, 1981).

In fact, Drach makes an explicit “striking” analogy between Chomsky’s alleged vacillation on the topic and the reading of Descartes whereby he formulated his doctrine of innate ideas solely to account for God, writing “Descartes’s physics would have threatened God were it not for innate ideas; Chomsky uses them to reconcile his linguistics with a belief in Man -- his creativity and uniqueness… I like to speculate that his change of mind about creativity,
first said to be accounted for by his rules and then re established as a mystery, is due to his having noticed at one point the danger to creativity if it could be accounted for by transformational grammar, and having backtracked and put it out of reach, preferring to give up any claim of accounting for it to engulfing it in the process. In this he was more faithful than Descartes, whom Pascal reproached with having discarded God after using him to give his universe a shove, and more perspicacious than Malebranche, who in enlisting Descartes’s philosophy in a defense of the Faith is said to have contributed considerably to its breakdown,” (Drach, 65, 1981). Putting aside the uncomplimentary assertion that Chomsky (and Descartes) were not principled philosophers or scientists, Chomsky (1982) argues that Drach constructed a straw-man in her formulation of the notion of creativity:

“The basic confusion that runs through Drach's account can be summarized as follows. She begins with my observation that (A) the study of grammar can bring to light the mechanisms that enter into the CALU. She concludes from (A) that I have claimed that (B) all of language, including the CALU in its entirety, ‘is accounted for in toto by the rules of the transformational grammar.’ Then, she continues, after the latter claim had ‘more than done the job it was called upon to do-gather countless repentant behaviorists to the Chomskyan fold,’ I silently withdrew it, noting that (C) the CALU remains a mystery. Given (C), it then follows, she concludes, that (D) my ‘account of language and of the knowledge of it leaves the CALU out completely.’ The errors of reasoning are transparent. (B) does not follow from (A) (nor have I ever claimed that (B)), and (D) does not follow from (C). Furthermore, I have held to the same position throughout, namely, (A) and (C), along with the obvious thesis (which, as noted above, Drach accepts) that
(E) exhibiting the grammatical mechanisms involved in the CALU sheds important light on it, while not accounting for it,” (Chomsky, 428, 1982).

Recalling our discussion in §1, the critical mistake Drach makes is that the creative aspect of language use is the *kind of thing* that would be amenable to a formal interpretation. Having read Chomsky’s work on transformational grammar, Drach should have understood that the goal of the project was a formal, abstract theory of linguistic *form*. Given that a “‘use theory of meaning’ was implicit” in those works (Chomsky, 22, 1975) -- but not so subtle given how he had developed his project and his discussion of the relation of syntax to semantics (Chomsky, 92-105, 1957) -- the creative aspect of language use is an aspect of *use* and therefore an aspect of meaning and would fall quite outside the scope of transformational generative grammar. In this respect, Drach fundamentally misunderstood the scope of transformational generative grammar. Drach quotes two lengthy passages from Chomsky (1967) *Language and Mind*, and writes “the oscillation seems to be, not between whether creativity is involved in performance or in competence, but, it seems, simply between whether we do or do not understand what makes possible the creative aspect of language use -- assuming that one may equate ‘the mechanisms’ in the second passage with ‘what’ (in ‘what makes it possible…’) in the first. But perhaps one can’t and I am misunderstanding something,” (Drach, 51, 1981). Drach misunderstood that the creative aspect, as a feature of a theory of meaning, could not be mechanistic. Just as the relation of Newton’s laws to the force of attraction was unintelligible, the relation of transformational generative grammar to the creative aspect of language use is unintelligible (and therefore, a mystery). Only if the creative principle is mechanistic can Drach equate the “mechanisms” with “what makes [the CALU] possible”. Of course, Newton’s laws *shed light on* the mystery of
gravitation; it certainly seems to be a phenomenon that acts with law-like regularity -- we don’t see gravity suddenly changing the speed with which it can attract objects or the number of dimensions involved in how it transmits its mystical force -- but we do not understand it because it has no mechanism.

Dualism and Nondualism in Cognitive Science and Philosophy of Mind

To use Wittgenstein’s terminology, the conduct of science wholly within the framework of mechanical philosophy is a language-game (cf. pp. 16). Waldron makes a similar point, that when the goal of a science of the mind becomes the “naturalization of the mind” it takes on certain problematic assumptions about the nature of the mind (Waldron, 68, 2011). Wittgenstein would point out that these assumptions come from the use of the term “naturalization” because all use of words is embedded in a form of life -- a way of seeing and being in the world (Wittgenstein, PI §43, 1953). As scholars have become increasingly aware of the effects of their cultural conditioning in the Western world, Buddhist philosophy of mind and depth psychology has emerged as a wellspring for alternative conceptions of the nature of mind and matter. Now that we’ve covered -- in some depth -- the controversy surrounding the place of the CALU within the study of linguistics, we will explore the use of Buddhist philosophy by Waldron (2011) and Spackman (2012) to characterize the goals of contemporary cognitive science and philosophy of mind, as a means of stepping outside the language-game of the mechanical philosophy. We’ll apply the rule-following paradox, from Wittgenstein’s Philosophical Investigations §§138-242 to the construct of a transformational grammar within this anti-essentialist framework, and discuss how Fodor et al. (1980) provide a nativist, anti-definitional account which can bring us to the precipice of understanding the mystery of the creative aspect of language use.
Waldron appeals to Mahāyāna Buddhist critiques of essentialism to help reframe contemporary cognitive science, which has trapped itself by attempting “to isolate mind as a distinct entity or essence, or--a more recent development--to think of subjective experience as having an intrinsic nature or irreducible quality, dubbed ‘qualia,’” (Waldron, 69, 2011). Essentialism and reductionism -- specifically and respectively exemplified in “the notions of qualia and naturalizing the mind” are what Waldron calls the “twin ghosts of Cartesian dualism,” (Waldron, 69, 2011). While Waldron is playing the anti-Cartesian language-game, Chomsky would not disagree; Waldron’s ectoplasmic target is not “the ghost in the machine”; the ghost he’s busting is the machine. In an effort to banish those ghosts, he appeals to Nāgārjuna’s temporal argument against the causal efficacy of an intrinsic essence, that “something that is or has an unchanging essence (Sanskrit: svabhāva), existing independently in its own right, could not play a causal role in how things come to be,” and argues on that basis that essences -- or their derivatives, “irreducible qualities” should be left out of theorizing in cognitive science, as “it therefore makes no sense to speak of an unchanging essence within a temporal pattern of causal interaction; essences and causality are simply incompatible,” (Waldron, 70, 2011). Applying this idea to the mechanical philosophy, where we may have been tempted to suppose that the mathematical form of gravitation were its unchanging essence (svabhāva), if we accept Nāgārjuna’s argument, the mathematical form could have no causal efficacy to make gravity behave as it does. As Stephen Hawking famously put it, “what is it that breathes fire into the equations and makes a universe for them to describe?” Waldron is sensitive to the critique that “no one nowadays seriously believes in an ‘essential entity or nature’ that is truly independent of causal processes,” and says “this shift from thinking in terms of essence to thinking in terms of
interaction has occurred and is still occurring, albeit unevenly, in nearly all the disciplines. Indeed, it effectively characterizes modern thought,” (Waldron, 72, 2011). Perhaps on some level, this is true, but the ubiquity of the notion of the mind as a set of mental mechanisms, even if no particular mechanism is “the essence” of one’s mind, still projects an idea that the “interactions and causal processes” of which Waldron speaks are essentially mechanical. The hustle and bustle in the physics community to develop a “theory of everything” exemplifies the idea that all of reality may boil down to some essence -- even if it is a fancy, context-dependent or emergent essence.

Spackman (2012) also uses Nāgārjuna’s views of svabhāva to develop a philosophy he calls “neutral non-dualism” in response to three problematic attempts to use Buddhist philosophy of mind to reframe the debate in philosophy of mind. Spackman first shows how “consciousness-based views” such as Wallace’s (2007) suffer from some of the traditional deficiencies of Cartesian Dualism: the interaction problem (how nonphysical entities can causally affect physical entities), and the “exclusion problem” otherwise sometimes known as the “causal closure of the physical” which suggests that if physical causes are enough to specify a given effect, then by Ockham’s Razor, we shouldn’t posit additional causes (Spackman, 744, 2012). He then critiques “naturalistic” and “phenomenological” approaches, principally for their failure to account for the explanatory gap. While no such gap exists in substance dualism (where the gap is an ontological one), in a phenomenal concepts approach, such as Papineau (2002), it is unclear that the phenomenal properties can actually “account for the kind of knowledge made possible by phenomenal consciousness” in a way compatible with physicalism (Spackman, 745, 2012). Phenomenological approaches which attempt to “sidestep” the explanatory gap by
blaming the legacy of Cartesian dualism for the separation of mind and body are equally
inadequate for dissolving the explanatory gap, on Spackman’s account because if “all life
involves a kind of interiority, an at least rudimentary sense of bodily self that makes the
environment a place of significance for the organism, we might ask whether there isn’t an
explanatory gap between this basic notion of interiority and the physical world. Either there is
something that it is like for the organism to have this kind of interiority, or there is not,”
(Spackman, 747, 2012). Spackman suggests, following Nāgārjuna, that no positive statements
can be made about ultimate reality at all, and that we should therefore adopt a framework he
fashions as “neutral non-dualism” in homage to Russellian “neutral monism” and Nāgārjuna’s
non-dualist approach (Spackman, 748, 2012). “Nāgārjuna’s critique is directed not only at the
view that objects are svabhāva [intrinsic natures], but that properties and events are as well. On
the interpretation in question, the ultimate truth about these things - their lack of intrinsic nature -
cannot be adequately conceptualized or positively described, though it can be known directly
through experience,” (Spackman, 748, 2012). This presupposes a difference between the content
of nonconceptual experience and conceptual content; an explanatory gap. That is, unless both of
these types of mental content are aspects of ultimate reality, in which case, on the neutral
non-dualist account, “we cannot assert that [reality] is differentiated, neither can we assert that it
is undifferentiated,” (Spackman, 748, 2012). At the conventional level, there has been much
debate in recent years about the relation of nonconceptual to conceptual mental content, or
whether there is such a distinction to be made, but these considerations -- while deeply related to
the contents of this paper -- fall outside its present scope. “Neutral non-dualism as [Spackman
has] described it is in some ways reminiscent of the ‘New Mysterianism’ proposed by Colin
McGinn,” and is also strikingly similar to the position advanced by Chomsky (1998); mysterianism differs in that the limits on our knowledge are based on the physical limitations of our brains and is thus predicated on a physicalist model of the Universe (Spackman, 749, 2012). Neither Chomsky nor Spackman is a mysterian in that sense. For Spackman, as for Chomsky, the mystery arises from the nature of the world itself: the world is simply unintelligible. Spackman is sensitive to the critique that his framework may “give up on the struggle for understanding too early,” but hinted above that Nāgārjuna thought the nature of the world “can be known directly through experience,” (Spackman, 749,748, 2012). Wittgenstein certainly seems to understand this, and I would argue his therapeutic philosophy is a method for coming to know the nature of things, or rather their lack of intrinsic nature, through experience. This is the kind of insight that would help us in our attempt to reconstruct for contemporary cognitive science the notion of creativity which motivated Descartes’ and Chomsky’s interest in language use.

Meaning is Use

In §2, we saw that traditional/idea theories of meaning were inadequate or incoherent. We now have entirely independent considerations which can motivate a use theory of meaning: following Waldron (2011) and Spackman (2012) we see that we can not make the mistake of positing an “essence” or formal description of language use, such as “social practice”. Chomsky thinks language use is a “significant” question for the study of language, “if you could possibly study it, which you can’t in any serious way,” (Chomsky, 16:44-16:54, 2013). Therefore, we will undertake a study of it which, as Alan Watts would say “is not serious, but is sincere.” The unintelligibility of the world is part of what makes the creative aspect of language use so mysterious: language use is intelligible. In spite of every indication that language is a formal,
logical structure (such is the characterization given by transformational generative grammar) we
glean from Descartes and Newton 1) that the universe within which this system is embedded is
not mechanical, and thereby, we as human beings are not machines, and yet, we understand our
language. We can now understand Wittgenstein’s suggestion that meaning is how words are
used.

1. **Use theory of meaning = df** “For a large class of cases—though not for
all—in which we employ the word "meaning" it can be defined thus: the meaning of a word is its use in
the language,” (PI §43)

We may be tempted to ask, what does this understanding consist in? Wittgenstein argues
that we shouldn’t think of understanding as a mental process, “for that is the expression which
confuses you,” (Wittgenstein, PI §154, 1953). This is because, as we discussed in §2, thinking of
understanding as a mental process is thinking of an idea theory of meaning. Rather than think of
the meaning as some sort of semantic marker language behind the surface structure of the
thought as it appears to us, we should consider the “particular circumstances,” which justify our
claims to understanding (Wittgenstein, PI §154, 1951). This is not an appeal to a radical form of
context-dependence for meaning, where meaning would somehow be determined by the
positions of every atom of the total, all-encompassing world-machine (however such a thing
could determine meaning); if meaning comes from use and we accept the existence of the
creative aspect of language use, then there is \textit{nothing} which determines the meaning of a statement, because meaning isn’t determined, it is created, by a mysterious aspect of the mind.

**The Rule-Following Paradox**

A consideration of Wittgenstein’s rule-following paradox, as formulated in §§185-201 of the \textit{Philosophical Investigations}, will help clarify this proposal. Wittgenstein presents a thought experiment whereby the reader considers how a pupil may learn to follow an algebraic rule, “+2”. If the pupil were to successfully add “+2” in the manner we are used to (e.g. 0, 2, 4, 6, 8, … 996, 998, 1000) we would be inclined to say he’d mastered the rule. However, we could suppose that the pupil successfully added “+2” in the manner we are used to up to 1000, but then wrote (e.g. 1004, 1008, 1012…). Wittgenstein toys with our intuition and asks us not to be misled into thinking that we “knew” or “meant” for the pupil to write 1002 after 1000. “So when you gave the order ‘+2’ you meant that he was to write 1002 after 1000 -- and did you also mean that he should write 1868 after 1866, and 100036 after 100034, and so on -- an infinite number of such propositions?” (Wittgenstein, PI §186, 1953). If meaning were represented as a semantic marker language of the type Katz (1966) described, an \textit{infinite} number of semantic markers would be necessary for such a formulation! Therefore the interlocutor objects, “No: what I meant was, that he should write the next but one number after every number that he wrote; and from this all those propositions follow in turn,” (Wittgenstein, PI §186, 1953). This isn’t satisfactory for Wittgenstein, who presses his interlocutor about what \textit{really does follow from the propositions} and insists that he really means when he tells his pupil “add 2”: “your idea was that that act of meaning the order had in its own way already traversed all those steps: that when you meant it your mind as it were flew ahead and took all the steps before you physically arrived at
this or that one,” (Wittgenstein, PI §188, 1953). This sounds a little absurd and defies introspection, because an infinite set of propositions surely doesn’t come before your mind when you say (and mean) to someone, “add 2”. The reader is encouraged to imagine instructing a pupil, saying “add 2” and look and see what does come before their mind. The interlocutor asks, “But how can a rule show me what I have to do at this point? Whatever I do is, on some interpretation, in accord with the rule,” to which Wittgenstein responds, “Interpretations by themselves do not determine meaning.” (Wittgenstein, PI §198, 1953). There is, Wittgenstein contends, “a way of grasping a rule which is not an interpretation, but which is exhibited in what we call ‘obeying the rule’ and ‘going against it’ in actual cases,” (Wittgenstein, PI §201, 1953). The import of this exchange, and the accompanying considerations in these sections, is that interpretation is insufficient for understanding, and therefore “no course of action could be determined by a rule, because every course of action can be made out” -- can be interpreted -- “to accord with the rule,” (Wittgenstein, PI §201, 1953). This is where Wittgenstein’s philosophy crucially intersects with Chomsky’s transformational generative grammar. If a “language” is a set of sentences that is characterized by some set of formal, recursively enumerable rules, how is it that Chomsky’s notion of “grammatical” is possible? Chomsky writes, “Syntax is the study of linguistic form. It’s fundamental notion is ‘grammatical,’ and its primary concern is to determine the grammatical sentences of any given language and to bring to light their underlying formal structure,” (Chomsky, 57, 1975). Couldn’t any interpretation of syntactic structure be made to accord with the rules, thereby rendering the notion of “grammaticalness” meaningless?

The answer: meaning is created by the action of the creative aspect of language use, and this aspect is a way of “grasping [the rules]” of generative grammar by “obeying it” or “going
against it *in actual cases*” and is therefore neither an interpretation, *nor* part of the knowledge of language a mature speaker-hearer possesses, and most mysteriously of all, is undetermined by a given situation, because any determined course of action (or use of language) would succumb to the rule-following paradox (it would be “the substitution of one expression of the rule for another,” (Wittgenstein, PI §201, 1953). Let’s unpack that characterization a little. Chomsky claimed (§2, df. 1.5) that “a deep structure enters the semantic component and receives a semantic interpretation”; thereby, the formal structure of a sentence or thought is given content; Chomsky writes “a grammar assigns semantic interpretations to signals, this association being mediated by the recursive rules of the syntactic component,” (Chomsky, 141, 1965) and thereby we have “an account of the mechanisms that enter into the [creative aspect of language use]” (Chomsky, 424-5, 1982). Wittgenstein wrote that there is a “way of grasping a rule which is *not* an interpretation but which is exhibited in what we call ‘obeying the rule’ and ‘going against it’ in actual cases,” (Wittgenstein, PI §201, 1953). Every *use* of language would be an “actual case” and the creative aspect of language use, (the unboundedness + intelligibility + non-determinability of language use) would generate an “actual case” that had semantic content. The mechanisms of the syntactic component build the set of semantic interpretations; the choice of interpretation thereby falls to the creative aspect.

We have seen that the universe is not a machine, but rather, works by mystical forces that are ultimately unintelligible to human understanding. The creative aspect of language use is the expression of one such mystical force, which Descartes called (in his essentialist framework, “res cogitans”) and which we, taking into consideration Waldron’s and Spackman’s Buddhist critiques of essentialism, will simply say, can only be known through first-person experience.
This would certainly align with the Cartesian and Chomskyan intuition that the use of language “for the free expression of thought and feeling” is an index of the existence of other minds; it would be an expression of the same mystical force present within another that we know to be present within us. It is the author’s contention that this is the point Chomsky has tried to make throughout his career with his discussions of the creative aspect of language use, but, for fear of sounding like a mystic, has been rather reserved about it. Chomsky believes that many human actions, those we would call choices, are “not determined” and that “we know that as well as we know anything at all. And that is kind of irreducible, phenomenal knowledge” (Chomsky, 16:51 - 17:04, 1998). It is interesting that Chomsky uses the term “phenomenal knowledge” especially in light of Nāgārjuna’s rejoinder that the nature of the world -- it’s lack of svabhāva -- can be known directly through experience (Spackman, 748, 2012). It has been the goal of this paper to bring about a kind of first-personal, direct, phenomenal understanding of the creative aspect of language use, because it is not the kind of thing amenable to a formal exposition.

**Further Directions: Conceptual Atomism and the Creative Aspect**

Fodor et al. (1980) argue for a conceptual atomism on the basis of their anti-definitional account that lexical concepts are primitive and innate, with no internal structure at the semantic level of representation. This is important because concepts are therefore individuated not according to definition (as that would be a semantic representation) but rather by reference to their broad content (meaning and reference) and symbol type, which is to say, the kind of role the symbol plays in cognitive processes (Schneider, 2010: 224). Instead of differentiating the undefinable innate structures of the mind as Fodor et al. (1980) do into atomic, primitive concepts, perhaps those aspects of the mind which are truly mysterious, those which defy
definition, also defy differentiation. If phenomenal consciousness, primitive concepts, and the creative aspect of language use were undifferentiable, and we take seriously the arguments against essentialism that we gleaned from our discussion of Nāgārjuna, we are left with a familiar picture of the human mind made strange: it would certainly seem, if those aspects of the mind were integrated, that we’d stumbled upon what many in the Western world would call a soul: a center of sensitivity, awareness, and thought, that resides in all human beings and any other organism that can initiate a creative act under the constraints of its form, its biology. Stranger still, this soul would not be some thing, some essence, because essences have no causal power (Waldron, 2011), and as we saw, the very mystery of the creative aspect of language use comes from its causal efficacy; its power to enact the formal structure of a transformational generative grammar for the free expression of human thought and feeling. Perhaps, to make such a radical position intelligible to the cognitive sciences requires a fundamental juxtaposition of form on the one hand, and content on the other; the very dualism that is built into our present situation of a mechanical, formal universe on the one hand, and irreducible phenomenal knowledge on the other. Perhaps there is some reason, stemming from the character of the creative aspect that we are relegated to thinking in dualistic terms.

Putnam wrote that in spite of the difficulty of semantics, “there is still plenty for us to investigate in our sloppy and impressionistic fashion, and there are plenty of real results to be obtained,” (Putnam, 201, 1970). Whether or not the undefinable aspects of the mind, rendered innate if we take Fodor et al. (1980) seriously, are truly differentiable is the kind of “core fact” about the use of language that could be studied empirically. It is conceivable that a new language-game, which takes account of the empirical discoveries gathered in the course of
scientific research, could also take account of those aspects of the world which are incompatible with the mechanical philosophy -- those aspects which are above naturalization, which I call “supernaturalizable”. Chomsky often asks if there is any reason we should study humans differently “above the neck” metaphorically speaking. The supernaturalizability of certain aspect of the mind may require some considered, and considerably different approaches to knowledge and understanding. This would be a conventionally dualist but ultimately nondualist approach to cognitive science and neuroscience. Theories of the mind which appeal to “soul-like” entities are often ridiculed, as we saw, with the image of the ghost in the machine; but as Chomsky pointed out, “that is misunderstanding,” (Chomsky, 1998).

Perhaps the ghost is not in the machine because the machine is in the ghost....
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