Chomsky, Wittgenstein, and the Behaviorist Perspective on Language

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In an essay published in 1969, entitled "Some Empirical Assumptions in Modern Philosophy of Language," Noam Chomsky reviewed some of Wittgenstein's later work. In that review Chomsky scored Wittgenstein's work on language almost as severely as he had Skinner's a decade earlier. That this later review has not become as famous as the earlier is unfortunate, for it is quite instructive — not only in providing a foil for Wittgenstein's important behaviorist (or at least anti-mentalistic) writings; but also in clarifying what is really at issue between Skinner and Chomsky, and in emphasizing a natural alliance between Wittgenstein and Skinner.

Wittgenstein devotes much of his later work — especially in The Blue and Brown Books and Philosophical Investigations — to warning of the mentalistic temptations which led him, in his early Tractatus Logico-Philosophicus, to develop an excessively formal account of language. But if Wittgenstein's early work is a good example of the dangers of mentalism, Chomsky's review — as well as his work on language acquisition — provides a vivid counter-example to any charge that Wittgenstein is setting up mentalistic strawmen.

Chomsky's comments on Wittgenstein's work are wide-ranging, covering a number of instances of what Chomsky takes to be Wittgenstein's "empiricist speculation." Some of his criticisms result from simply misreading passages in Wittgenstein's later works (considering Wittgenstein's formidable style, one is more inclined to commiserate than to condemn). For example, Chomsky supposes Wittgenstein to be claiming that language is learned through drill; and that words are given meanings when someone deliberately matches a particular word with a particular meaning. Such misreadings are not of special interest. But Chomsky also offers more basic criticisms, which show a great deal about the systematic differences between his own mentalistic perspective and

1Thanks to Douglas Long, Richard Grandy, Stanley Munsat, and Mary E. Newel for helpful comments on an earlier draft.
2The first part of the article is a critique of Quine's views; it is reprinted, with Quine's reply, in Davidson and Hintikka, 1969.
3See Day, 1969, for a much more extensive study of similarities between the views of Wittgenstein and Skinner.
the anti-mentalistic stance of Wittgenstein. Thus when Chomsky claims that Wittgenstein has neglected the (mentalistic) essence of his examples of cognitive activities (such as reading); when Chomsky asserts that Wittgenstein fails to consider unconscious thought processes; and when Chomsky chides Wittgenstein for failing to give real explanations: these are all based on Chomsky’s mentalistic opposition to Wittgenstein’s anti-mentalistic position. This paper will sketch the mentalistic/anti-mentalistic conflict between Chomsky and Wittgenstein; answer the main points of Chomsky’s mentalistic critique of Wittgenstein’s position; then turn the tables to show how Wittgenstein’s work can be used to effectively critique some of Chomsky’s views; and finally indicate briefly the importance of Wittgenstein’s work to the study of language behavior.

From a mentalistic perspective, any intelligent behavior — speaking a sentence, answering a question, solving a problem — consists in a specific, distinctive mental act; and such observable processes as speaking a sentence in answer to a question, picking out a requested object, or writing the solution to a problem cannot be the actual cognitive acts. The substance of cognitive acts, on this view, must be some sort of special mental rule-following, or chart-usage, or formula-imaging, or something of this sort.

Wittgenstein argues that although cognitive activities (such as language behavior) are indeed systematic and may be represented as in accordance with rules, they are generally not rule-following (Wittgenstein, 1958a, p. 13). But the mentalistic bias leads us to suppose that the essential element of any cognitive behavior is some covert rule-following or model-checking activity. It is this mentalistic positing of superfluous mental acts which Wittgenstein opposes:

> It is true I may hear a tune played and say ‘This is not how it ought to be played, it goes like this’; and I whistle it in a different tempo. Here one is inclined to ask ‘What is it like to know the tempo in which a piece of music should be played?’ And the idea suggests itself that there must be a paradigm somewhere in our mind, and that we have adjusted the tempo to conform to that paradigm. But in most cases if someone asked me ‘How do you think this melody should be played?’, I will, as an answer, just whistle it in a particular way, and nothing will have been present to my mind but the tune actually whistled (not an image of that). (Wittgenstein, 1958a, p. 166)

Of course such cognitive activities as using language involve very complex learned behaviors; but they need not (and generally do not) involve knowing a system of rules:

> But is it wrong to say: “A child that has mastered a language-game must know certain things”? If instead of that one said ‘must be able to do certain things’, that would be a pleonasm, yet this is just what I want to counter the first sentence with. (Wittgenstein, 1969, sec. 534)

The point is that one can perform such systematic, intelligent activities — which one might formally represent according to rules — without knowing a system of rules, and without any intermediary steps of rule-following or paradigm-imaging.

An especially effective example Wittgenstein employs in trying to loosen the mentalistic grip is found in the early pages of *The Blue Book*:

> Suppose I teach someone the use of the word “yellow” by repeatedly pointing to a yellow patch and pronouncing the word. On another occasion I make him apply
what he has learnt by giving him the order, ‘choose a yellow ball out of this bag.’ What was it that happened when he obeyed my order? I say ‘possibly just this: he heard my words and took a yellow ball from the bag.’ Now you may be inclined to think that this couldn’t possibly have been all; and the kind of thing that you would suggest is that he imagined something yellow when he understood the order, and then chose a ball according to his image. To see that this is not necessary remember that I could have given him the order, ‘Imagine a yellow patch.’ Would you still be inclined to assume that he first imagines a yellow patch, just understanding my order, and then imagines a yellow patch to match the first? (Now I don’t say that this is not possible. Only, putting it in this way immediately shows you that it need not happen. . . ) (Wittgenstein, 1958a, pp. 11-2)

This example is designed to show how our mentalistic system-idiom results in an idealized, intellectualized model for cognitive activities. This mentalistic system-idiom makes us suppose that all cognitive acts (using language, obeying an order, picking out a specified color, etc.) must be done by systematic reasoning: such acts must involve some form of rule-following (or chart-imaging, or formula-applying) behavior. And when one does not overtly follow rules in performing such acts, we assume that the rule-following is performed in a covert (perhaps unconscious) realm. Thus the mentalistic model leads to the proliferation of shadowy mental events and pseudoexplanations, and blocks legitimate explanatory efforts.

The nature of the mentalistic beast will become clearer as the discussion proceeds, but at this point it may be helpful to point out what mentalism is not. One might suppose that the mentalist is simply the Cartesian dualist, while Wittgenstein is the materialist, arguing for mind-body identity (in opposition to the Cartesian ontological claim of minds in addition to bodies). But this is not at all the issue. Certainly Wittgenstein opposes any non-physical, mental realm which is distinct from the body yet somehow guides the body. But he is also opposed to a large group of theorists who reject mind-body dualism in favor of materialism, but who are nonetheless still mentalists. Such theorists continue to employ mental mechanism types of explanation (note Wittgenstein, 1958a, p. 120; and Wittgenstein, 1958b, sec. 156, 158). They view cognitive activities from a mentalistic perspective, despite the fact that they may also hold that the mental images, rules, theories, meanings — which the mentalist insists must be there — are actually traceable to some physical source, e.g., a neuron pattern. “Mentalistic materialist,” paradoxical as such an appellation may sound, is not a misnomer for the materialist adherents to mentalistic explanation.

As if invented to illustrate the perils of mentalism run amok, Chomsky is the arch-mentalist. He not only acknowledges the commonly supposed mentalistic acts

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4 The mentalistic materialist supposes that there must be some specific conscious or unconscious mental event which actually constitutes any cognitive activity — and thus the materialist (misled by his mentalistic bias) seeks a physiological source for this supposed specific act constituting the cognitive activity. It is not the physiological investigation itself that is wrong; it is rather the fact that the physiologist has been misled by the mentalistic model, and his investigation will be unnecessarily complicated by the supposition of a mental mechanism (and superfluous mental acts) for which he must attempt to find a physiological basis.

Skinner also specifically objects to mentalistic materialism; see Skinner, 1964, p. 95; Skinner, 1969, p. 282; and Skinner, 1974, p. 117.
(those Wittgenstein questions), but also appends a plethora of more exotic mentalistic acts (such as unconscious theory-following) which go well beyond what the ordinary man-on-the-street mentalist assumes. And when Chomsky takes up Wittgenstein’s remarks on reading, the mentalistic/anti-mentalistic battle is joined. Wittgenstein uses reading as an example of an activity which is sometimes (when one is reading aloud) perfectly observable, but which we are inclined to view mentalistically — as necessarily involving elaborate concurrent unobservable activities, such as covert rule-following. Wittgenstein’s claim is that — in at least many cases, when one is a practiced reader — one simply sees what is written and perhaps speaks it aloud, with no further conscious or unconscious mental activities. In such a case, the reading behavior is quite as open and observable as is the behavior of hitting a ball.

In response, Chomsky claims that Wittgenstein — while attempting to formulate criteria to distinguish between actual cases of reading and non-reading — has in fact merely given criteria for one’s being justified in asserting (perhaps erroneously) that someone is reading. Why does Chomsky suppose that Wittgenstein is offering a criterion for justified (rather than correct) assertions that a cognitive activity is occurring? In The Brown Book Wittgenstein states his point quite plainly:

> It was not the function of our examples to show us the essence of ‘deriving,’ ‘reading,’ and so forth through a veil of inessential features; the examples were not descriptions of an outside letting us guess at an inside which for some reason or other could not be shown in its nakedness. We are tempted to think that our examples are indirect means for producing a certain image or idea in a person’s mind — that they hint at something which they cannot show. (Wittgenstein, 1958a, p. 125)

And apparently the temptation exerts so strong a pull on Chomsky that he cannot suppose anyone holds a different view, no matter how clearly it is stated. As Chomsky states: “... there is a temptation to regard the unconscious mental state attributed to A as the criterion for correct (not justified) assertion of the statement that A is reading” (Chomsky, 1969, p. 311). And this view Chomsky takes to be not only correct, but so obviously so that no one — including Wittgenstein — could really disagree with it. Assuming this, Chomsky interprets Wittgenstein as giving only criteria for being justified in supposing that the (hidden) mental activities are occurring (those covert mental activities being the actual cognitive events). But in fact Wittgenstein’s basic, anti-mentalistic point is that the criteria for these cognitive activities actually occurring often are just the commonplace, publicly observable activities, together with surrounding circumstances (including, in some cases, certain skills or acquired proficiencies, e.g., in a language). Such an activity as reading aloud or writing a solution or speaking a sentence just is the cognitive activity — it is not a signal (more or less reliable) that the actual cognitive activity is simultaneously being performed in private, in a covert realm. It is only our mentalistic bias which makes us suppose that a real cognitive activity must involve following a set of rules or employing a theory or using an imaginary chart. For

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5This is a point toward which substantial portions of The Blue and Brown Books and the Philosophical Investigations are directed. Some of the most important passages include: Wittgenstein, 1958a, pp. 11-2, 35, 39, 41-2, 43, 50, 85-6, 87, 89, 100, 105, 113, 117-22, 125, 143-5, 152, 156-7, 165-6, 183, 185; and Wittgenstein, 1958b, sections 290, 292, 304, 449, 591-2, 597-8, 607.
example, when one writes normally the thinking (the intelligent act) is not something performed at some hidden level: it is there, in the writing (Wittgenstein, 1958a, p. 6; see also p. 145). It is not (as the mentalist requires) performed in some hidden recess and then translated into a motion of the hand. Don’t look for something “hidden” which guides the hand, Wittgenstein is saying; there is the intelligent act, in front of you, as the person writes.

To avoid confusion, it should be noted that Wittgenstein opposes mentalism; he is not denying all mental events (not even all covert mental events). Wittgenstein opposes the supposition of a mental mechanism designed to explain all cognitive activities, a mechanism which functions in a covert, mysterious realm and the activities of which impart the intelligent substance to cognitive behaviors. He distinguishes the hypothetical mental mechanism from actual mental events in several passages; for example:

. . . calling the ability to solve a mathematical problem, the ability to enjoy a piece of music, etc., certain states of the mind; we don’t mean by this expression ‘conscious mental phenomena.’ Rather, a state of the mind in this sense is the state of a hypothetical mechanism, a mind model meant to explain the conscious mental phenomena. (Such things as unconscious or subconscious mental states are features of the mind model.) (Wittgenstein, 1958a, pp. 117-8)

Thus when Wittgenstein denies the mental mechanism, he is not denying the (often covert) mental events and processes of everyday experience such as daydreams, pains, covert verbal behavior: “naturally we don’t want to deny them” (Wittgenstein, 1958b, sec. 308). Rather, he is opposing the mentalistic model which requires that the substance of each cognitive behavior be some particular covert mental activity occurring in the special realm of the mind, some activity involving rule-following or imaging of a chart or something of that sort.

But now the question arises: why this opposition to mentalism? After all, the mentalistic scheme does appear to have certain advantages. For example, Chomsky would insist that — in stark contrast to Wittgenstein’s work — the mentalist offers explanations of cognitive behavior. As a case in point: if we wonder how people read, the mentalist can explain by appeal to an unconscious mental state, in which unconscious rules are employed. In answer, we can piece together several Wittgensteinian arguments to show the emptiness of such mentalistic explanatory efforts.

One clear indication of the vacuity of mentalistic explanatory attempts can be found in the sort of response the mentalist might make to Wittgenstein’s examples (such as the examples to show that there is generally no imaging of a chart when we follow the instruction to pick out a yellow ball, no special covert mental events which always occur when we read). As the following passage shows, it is a response which Wittgenstein anticipates:

But now just read a few sentences in print as you usually do when you are not

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6Chomsky notes this passage as an example of a remark “so outrageous that one can only suppose that something else was intended” (Chomsky, 1969, p. 315n.). This is symptomatic of the radical differences in their perspectives: from Chomsky’s mentalistic orientation, this is so blatantly false as to inspire incredulousness; but it is quite reasonable from within Wittgenstein’s anti-mentalistic framework. (Note also Wittgenstein, 1958a, p. 16f.)

7For further comments on the hypothetical mental mechanism/conscious mental phenomena distinction, note Wittgenstein, 1958a, pp. 18, 40, 117-8; and Wittgenstein, 1958b, sec. 154, 308, 689.
thinking about the concept of reading; and ask yourself whether you had such experiences of unity, of being influenced, and the rest [criterial mental experiences], as you read. — Don't say you had them unconsciously! (Wittgenstein, 1958b, sec. 171)

But of course this is precisely what Chomsky will argue. Wittgenstein’s arguments and examples may show that there are not always accompanying conscious mental events for every cognitive activity; but after all, Chomsky’s claim is not that there are always accompanying conscious mental events, but rather that there are always special, specific mental events (e.g., rule-following, often unconscious) accompanying — or better, constituting — each particular cognitive activity. Chomsky’s willingness to appeal to the unconscious is nowhere more evident than in his criticisms of Wittgenstein’s work. For example:

. . . it seems that there is a temptation to regard the unconscious mental state attributed to A as the criterion for correct (not justified) assertion of the statement that A is reading. And Wittgenstein suggests no argument to indicate that this temptation is in any way misguided. Perhaps, in fact, I have a (no doubt in part unconscious) theory involving the postulated mental states of humans performing certain acts such as reading, etc., which is related to my (also unconscious) system of linguistic rules in such a way that I assert that A is reading when I believe him to be in such a mental state, and my assertion is correct if my belief is correct. (Chomsky, 1969, p. 311)

So Chomsky’s response to Wittgenstein’s examples might be that they are nothing to the point. Of course introspection doesn’t reveal the required mental events and states: they are unconscious.

But this further clarifies the nature of the conflict between Chomsky and Wittgenstein. Wittgenstein’s examples do not actually refute Chomsky’s system, for the nature of the mentalistic system is such that neither publicly observable nor introspective phenomena can refute it. If introspection does not reveal conscious mental states or rule-following behavior, then they must be unconscious. There is always sufficient latitude for adjustments which will preserve the mentalistic system — no matter what data are offered. And it is precisely this feature of mentalism and mentalistic explanation which reveals its emptiness: it “explains” all possible cognitive phenomena, and thus explains nothing.8

Another flaw occurring in mentalistic explanatory attempts is that they often suffer from a type of circularity. As Skinner points out:

. . . it is not good scientific practice to explain behavior by appealing to independent variables which have been inferred from the behavior thus explained, although this is commonly done, particularly by psychoanalysts, cognitive theorists, and factor analysts. (Skinner, 1969, p. 264; note also Skinner, 1953, p. 28)

And this is precisely the sort of pseudoexplanatory procedure generally employed by mentalists in their attempts to account for language acquisition and use. The complex pattern of behavior is observed, and on this basis a set of (unconscious) rules is inferred.

And then the inferred rules are offered as an explanation of the behavior. The explanatory emptiness of such a procedure is convincingly illustrated by Wittgenstein's reading example:

Now we should of course like to say that what goes on in that practised reader and in the beginner when they utter the word can’t be the same. And if there is no difference in what they happen to be conscious of there must be one in the unconscious workings of their minds, or, again, in the brain. — So we should like to say: There are at all events two different mechanisms at work here. And what goes on in them must distinguish reading from not reading. — But these mechanisms are only hypotheses, models designed to explain, to sum up, what you observe. (Wittgenstein, 1958b, sec. 156)

Chomsky expresses surprise at Wittgenstein's statement that such mechanisms are only hypotheses (‘. . . the word ‘only’ is curious here.’) (Chomsky, 1969, p. 310). But the force of the ‘only’ is that such mind mechanism hypotheses are only (are at most) a summary of the observed data, or a mere hypothesis (or mere inference) from such observations. They have no other grounds, no further support. Even if the hypotheses can be given empirical content, as generally offered by mentalists (including Chomsky) they are only inferences from observed behaviors; no experimental support is offered for them, and they are mere speculation when simply turned back on that behavior. And besides, it is not at all clear that such a mind mechanism hypothesis could be tested. The characteristics of an unconscious mental mechanism are notoriously difficult to specify, except perhaps for one: like Proteus, it can change its shape whenever that seems desirable.

But Wittgenstein does not oppose all uses of cognitive mediators in explaining human behavior. In the first place, many cognitive activities are — he insists — open and observable. And in addition to these observable cognitive activities, Wittgenstein acknowledges some covert psychological activities. There are instances, when, e.g., before making a move in chess or spelling a word, we perform the covert cognitive behavior of reciting a rule. But even if such covert cognitive events are sometimes part of the explanation of a cognitive behavior, they are by no means the end and entirety of the explanation (as mentalistic explanations generally make them out to be). Rather, the explanation is forced to take another step: why is this rule recited in these circumstances? How does it mediate the cognitive behavior? When these further questions are pressed, appeal to covert rule-following behaviors and other cognitive mediators is soon exhausted. For how did we come to apply the covertly verbalized rule? If indeed there was a rule (or if there was an imagined chart), how did we know the right way to use it?9

9For more on this point, see Wittgenstein, 1958a, pp. 73, 85, 88, 89; and Wittgenstein, 1958b, sec. 211, 219, 239, 292.

Wittgenstein and Skinner are in especially close accord on the limitations of this sort of explanation. For example, Skinner's disparagement of the "homunculus" or "inner man" explanations is also based on the fact that such purported explanations are usually altogether too convenient, revealing their vacuity in their perfect elasticity in "explaining" any sort of behavior (Skinner, 1953, p. 279; Skinner, 1964, pp. 79-80, 82; Skinner, 1969, p. 278; Skinner, 1974, p. 117).

And like Wittgenstein, Skinner also opposes such claims of explanatory adequacy on the grounds that even when covert behaviors do occur, explanation has by no means reached a stopping point (Skinner, 1969, p. 148).
If the mentalistic bias is removed, these rules are no longer required: one just performs the cognitive act (without employing rules at all, either consciously or unconsciously). Or in the instances when one is following a rule in performing some cognitive behavior, one just follows that rule (without requiring another rule to explain how it is to be followed). Of course in neither case is this the end of the explanatory story. The actual explanation — which Wittgenstein insists is beyond the scope of philosophy (or linguistics) — is still to be given; it is a matter for empirical scientific investigation,¹⁰ and will probably be in terms of training, reward of certain responses, building the desired behavior from natural responses,¹¹ and so on.

Having noted Wittgenstein’s avoidance of explanatory attempts, we can see the basis for Chomsky’s plaint that:

Wittgenstein . . . explicitly restricts himself to descriptions that do not offer even the hint of an explanation. By thus restricting himself to data in and for itself, as the subject matter of the philosopher’s exclusive attention, he necessarily turns away from many interesting and significant questions about the mental reality (language, systems of belief, the basis for perception, etc.) that might be illuminated by use of this descriptive material not merely as data but as evidence. . . . (Chomsky, 1969, pp. 313-4)

Wittgenstein would hardly deny that he imposes such restrictions. For example, he states:

Our method is purely descriptive; the descriptions we give are not hints of explanations. (Wittgenstein, 1958a, p. 125; note also Wittgenstein, 1958b, sec. 109)

So the question is whether he can justify such restrictions.

The core of Wittgenstein’s reasons for his restrictions on the legitimate enterprises of philosophy (and linguistics) can be found in a pithy passage from the Investigations:

Grammar does not tell us how language must be constructed in order to fulfill its purpose, in order to have such-and-such an effect on human beings. It only describes and in no way explains the use of signs. (Wittgenstein, 1958b, sec. 496)

In opposition to Wittgenstein, Chomsky insists repeatedly on the explanatory power of grammars, and especially on the explanatory power of any linguistic theory which “. . . succeeds in selecting a descriptively adequate grammar on the basis of primary linguistic data . . .” (Chomsky, 1965, p. 25).¹² Chomsky maintains that to the extent that a linguistic theory achieves explanatory adequacy:

. . . to this extent, it offers an explanation for the intuition of the native speaker on the basis of an empirical hypothesis concerning the innate predisposition of the child to develop a certain kind of theory to deal with the evidence presented to

¹⁰That Wittgenstein does approve of the use of hypotheses and models when they are employed in legitimate scientific theorizing (rather than as mentalistic constructs) is evident in Wittgenstein, 1958a, pp. 6, 88; and Wittgenstein, 1958b, p. 193. Wittgenstein approves actual scientific and empirical explanation; he is opposed to explanatory attempts by philosophers (and linguists) because they do not have any basis for giving explanations (and thus resort to mentalistic pseudoexplanations).

¹¹See Wittgenstein, 1958a, pp. 89-90.

¹²Chomsky, 1965, p. 24: “A grammar can be regarded as a theory of language; it is descriptively adequate to the extent that it correctly describes the intrinsic competence of the idealized native speaker.”
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him. Any such hypothesis can be falsified (all too easily, in actual fact) by showing that it fails to provide a descriptively adequate grammar for primary linguistic data from some other language — evidently the child is not predisposed to learn one language rather than another. (Chomsky, 1965, pp. 25-6)

In short, a linguistic theory that has explanatory adequacy describes the universal grammar; it describes the innate, species-specific language propensities which dictate what languages are possible, what languages a human can learn.

In some respects, Chomsky’s is a legitimate quest. The linguist can examine a variety of particular grammars in his effort to discover their common elements (the linguistic universals) which form a universal grammar. And he can hypothesize that the elements are universal for human languages, and that hypothesis can be tested as additional particular grammars are developed.13 However, in order for a psychological explanation of language behavior to have substance, it must specify the conditions which give rise to the behavior, be they biological or experiential.14 And what basis is there — in the study of various particular grammars and the general characteristics they supposedly share — for the supposition that certain grammatical features result from inborn, species-specific human faculties? Whether such universal features are due to innate species-specific language propensities, or to a common root for all languages (see Lyons, 1970, pp. 126-7), or to some general learning principles (applicable for many species, but operative in special combinations in the learning of language), or to reinforcement contingencies present in most verbal communities (see Skinner, 1974, p. 99) — or whatever — the grammarian is in no position to say.15

One might respond that if Chomsky’s psychological hypotheses are speculative, still

13 Actually, it is not at all clear that the language universals hypothesized by the generative grammarians are subject to test and possible falsification quite as easily as Chomsky suggests. For as Braine points out:

This distinction between manifest and underlying structure in kernel sentences creates a special kind of methodological difficulty in assessing the validity of generative grammars. A full grammar contains both a phrase structure and a transformational component. If the terminal strings generated by the phrase structure are permitted to be arbitrarily different from any actual sentence structures, there are no independent data against which the phrase structure and the transformational rules can be separately tested. Since transformational rules provide an extraordinarily powerful tool for mapping one system into another, the grammarian can write the phrase-structure kernel partly on the basis of his convenience, free to correct any poor fit with the manifest structure of the language by using transforms to reshuffle the elements. (Braine, 1965, p. 277)

This point has also been noted (and illustrated) by Stanley Peters:

The power of transformations is so great that the same facts can often be described by setting up one base component-transformational component pair or by altering that base component and compensating with changes in the transformational component. (Peters, 1970, p. 32)

In fact, Peters claims that:

Preliminary mathematical linguistic research indicates that one can prove that there is not just one, but an infinite number of base components such that selection of an appropriate transformational component permits one to describe any set of recursively specifiable data. (Peters, 1970, p. 37)

Thus when additional particular grammars reveal the hypothesized universal, this:

. . . may not reflect a linguistic universal, but rather the prior decision to treat a certain kind of phrase-structure description as convenient. (Braine, 1965, p. 277)

And avoidance of falsification is the other side of this coin, for it may be accomplished (for at least some hypothesized universals) by employing transforms to save the hypothesized universals in the phrase-structure kernel.


they indicate potentially fruitful directions for further inquiry; and such hypotheses are to be welcomed, rather than disparaged. But it is hardly clear that Chomsky’s speculative efforts can be justified in such a manner. In the first place, Chomsky tends to present his hypothesis — or at least central elements of it — not as speculation, but rather as solidly established, almost indubitable truth about what is involved in language acquisition. For example, in *Aspects of the Theory of Syntax* Chomsky states:

A theory of linguistic structure that aims for explanatory adequacy incorporates an account of linguistic universals, and it attributes tacit knowledge of these universals to the child. It proposes, then, that the child approaches the data with the presumption that they are drawn from a language of a certain antecedently well-defined type, his problem being to determine which of the (humanly) possible languages is that of the community in which he is placed. *Language learning would be impossible unless this were the case.* The important question is: What are the initial assumptions concerning the nature of language that the child brings to language learning, and how detailed and specific is the innate schema (the general definition of “grammar”) that gradually becomes more explicit and differentiated as the child learns the language? (Chomsky, 1965, p. 27; emphasis added)

According to Chomsky, then, the only question really open is how detailed the innate schema is originally; that there is such an innate schema — that there is at least an innate, species-specific schema of rules specifically governing language acquisition — is presented by Chomsky as solidly supported fact (not as a speculative hypothesis which may give impetus to psychological investigation).

If Chomsky were more circumspect in his speculative suggestions, this would mitigate at least one of their faults. But even then the value of such hypotheses would remain dubious. After all, there is little need for theorists from other disciplines to suggest innateness hypotheses to psychologists. Far from being a remarkably innovative and suggestive sort of speculation, such hypotheses are the ubiquitous temptation psychological theorists must resist. In trying to explain complex behaviors, the notion that they may be due to innate ideas — or innate schemata or genetically inscribed, inherent theories or special species-specific powers or propensities — always has strong appeal. The danger is not in overlooking such hypotheses; rather, it is in overhasty appeals to such possibilities, thereby closing off investigation of other factors which may in fact be the cause or at least part of the cause of the behavior to be explained.

Why have these linguistic research limitations and concomitant restrictions on explanation been ignored, and by a linguist whose insights into formalizing language competence abundantly attest to his perspicacity? The answer lies in the mentalistic nature of the explanations proffered. As an example, consider Chomsky’s adumbration of the process of language acquisition:

To my knowledge, the only substantive proposal to deal with the problem of acquisition of knowledge of language is the rationalistic conception. . . . Suppose that we assign to the mind, as an innate property, the general theory of language that we have called “universal grammar.” This theory . . . specifies a certain subsystem of rules that provides a skeletal structure for any language and a variety of conditions, formal and substantive, that any further elaboration of
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the grammar must meet. The theory of universal grammar, then, provides a schema to which any particular grammar must conform. Suppose, furthermore, that we can make this schema sufficiently restrictive so that very few possible grammars conforming to the schema will be consistent with the meager and degenerate data actually available to the language learner. His task, then, is to search among the possible grammars and select one that is not definitely rejected by the data available to him. What faces the language learner, under these conditions, is not the impossible task of inventing a highly abstract and intricately structured theory on the basis of degenerate data, but rather the much more manageable task of determining whether these data belong to one or another of a fairly restricted set of potential languages. (Chomsky, 1968, p. 76; note also Chomsky, 1965, p. 27; and Chomsky, 1967, p. 437f.)

But why does Chomsky suppose that there must be some sort of theory ("assign[ed] to the mind, as an innate property," specifying "a certain subsystem of rules") employed by the person who acquires knowledge of (or competence in) a language? It is not because language learners report such a theory. Quite the contrary, the universal grammar which forms the theory is extraordinarily difficult to determine: it is not even available to careful introspection. Yet such a theory must be present: the only question is to what degree it is innate, and to what degree learned.

As Wittgenstein has noted, when we are convinced something must be a certain way, often it is because of the model employed (Wittgenstein, 1958a, p. 139; Wittgenstein, 1958b, sec. 158); and in the above account of language acquisition the model has a considerable effect. One who is competent in a language might be said to have mastered a formidable body of knowledge. From a mentalistic perspective, this is regarded as the knowledge of a certain system. Knowledge of a system seems to involve knowing the rules of that system, its organization, the way it works: "Clearly, a child who has learned a language has developed an internal representation of a system of rules that determine how sentences are to be formed, used, and understood" (Chomsky, 1965, p. 25). In short, learning the system of language must have involved learning its rules and organization, knowing a theory of the language. But the invention, by the language learner, of a highly abstract and intricately structured theory on the basis of degenerate data is (as Chomsky notes) an impossible task. Instead, one must assign to the mind, as an innate property, the general theory of language contained in the universal grammar. And then the task is the much simpler one of matching data against a fairly restricted set of potential languages, in order to develop the particular theory (or grammar).

But what a tangled web has been spun: there is knowledge of a language, which must involve knowledge of a very complex theory; but it is difficult to imagine how such a
complex theory could actually be developed by an initial language learner; so — since such a theory must be known — we suppose that there is a complex unconscious innate theory which makes it all possible. (We are burdened with not only a particular theory of grammar, but also a general language theory to make development of the particular theory seem feasible.)

If the mentalistic model were discarded, it would be possible to reject the whole notion of having to master rules or develop a theory, and thus also to reject the supposition of a complex innate language theory. It is possible that a language-learner does employ and learn such theories; but it is only the mentalistic model that makes us suppose this must happen. And freed of the mentalistic bias, it is not likely that we shall suppose a competent speaker to have used or developed any theory.

One benefit of razing mentalistic structures is revealed in the way Wittgenstein’s work complements that of learning theorists on verbal behavior. Chomsky criticizes Skinner’s *Verbal Behavior* on the grounds that it severely oversimplifies what is involved in language acquisition:

> The child who learns a grammar has in some sense constructed the grammar for himself on the basis of his observation of sentences and nonsentences. . . . Study of the actual observed ability of a speaker to distinguish sentences from nonsentences, detect ambiguities, etc., apparently forces us to the conclusion that this grammar is of an extremely complex and abstract character, and that the young child has succeeded in carrying out what from the formal point of view, at least, seems to be a remarkable type of theory construction. . . . Any theory of learning must cope with these facts. (Chomsky, 1959, p. 57)

Clearly *Verbal Behavior* is not a finished explanation of language acquisition and use. After all, it was not intended as such. But if the necessity of mastering a complex theory of language is rejected along with the mentalistic perspective from which it appears to be necessary, then the learning theory approach seems much more promising than is admitted by its mentalistic critics. Kenneth MacCorquodale, in a passage from his reply to Chomsky’s review of *Verbal Behavior*, catches the crux of the conflict:

> In no area of psychology is the contrast between “simple-mindedness” and “muddleheadedness” more poignant and clear than in the case of verbal behavior. The S-R psychologist is indeed at the simpleminded end of things, supposing as he does that verbal behavior can be reduced to its component processes, that these will be simpler functions than speech is, and that they will be familiar. This is the psychology of the nothing-but. . . . The alternative to simplemindedness is muddleheadedness, which finds it inconceivable that complexity may be composed of simplicities, and writes off the possibility of simple explanations as “trivial,” “very “unilluminating” or “not interesting,” want-

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20See Skinner, 1957, p. 11; and Skinner, 1969, Preface, vii. Thus if Skinner’s suggestions concerning, e.g., the learning of a grammar (or better, of verbal behavior which is in accordance with a grammar) are somewhat simplistic at several points, this is an indication of where further work should be done, beyond this very general early learning theory effort; it is by no means evidence that the learning theory framework is inadequate for dealing with language and language acquisition. Besides, Skinner is clearly more concerned with questions of why one responds verbally at all, or why one makes one statement rather than another (the grammar of the statement aside). His concern with grammar is obviously secondary (as indicated at Skinner, 1957, pp. 9, 44, 331, e.g.).
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ing a theory composed of something-more, and certain that it must be needed. (MacCorquodale, 1970, p. 90)

And the principle source of this certainty that something-more must be needed is the mentalistic perspective. For if, e.g., learning a language involves employing a complex theory and eliminating possible grammars by their failure to fit the input data, then it does indeed seem that something-more—a great deal more—is needed. In fact, the mentalistic perspective makes the task seem so herculean that all except mentalistic explanations are precluded. And in the face of an omniexplanatory mentalism, learning theory attempts do appear rather trivial.

Behaviorist learning theory is the most obvious beneficiary of anti-mentalistic arguments, since it has borne the brunt of several mentalistic linguists’ criticisms (e.g., Chomsky, 1959; Bever, Fodor, and Weksel, 1965a; Fodor, 1968); but the main point is more general, and it does not turn on the adequacy or inadequacy of learning theory for accounting for language acquisition. The point is that with the mentalistic requirements aside, the field is open for the development of various accounts of language acquisition and verbal behavior.

On the mentalistic model—as compared to the anti-mentalistic perspective—cognitive behaviors will in general be regarded as enormously more complicated. From the mentalistic perspective, a cognitive behavior—such as speaking a sentence—must involve the use of a set of rules (which are in turn part of an extensive theory of the language spoken), if not consciously then unconsciously. The explanation of this behavior must then involve not only the factors which caused the speaker to utter this particular sentence (and employ this set of rules within that language system, rather than some other or none at all); but must also tell how that very complex system of rules was mastered, and how the theory (of which the rules are a part) developed.

In contrast, from the Wittgensteinian, anti-mentalistic perspective, the cognitive behavior can be regarded as directly contingency-shaped, requiring no learning of rules at all. The behavior will of course be in accordance with a set of rules, and one might give a formal description of the behavior patterns in terms of such rules (see Wittgenstein, 1958a, p. 13). But the actual performance of the act may involve no use of rules (conscious or unconscious) at all. In short, one can learn very complex patterns of behavior simply due to the direct effects of the contingencies involved, without in any way formulating rules. In such cases, one’s behavior is shaped into the pattern as successive approximations to the pattern are rewarded (or reinforced); or as sets of behaviors are shaped and interrelated through classical conditioning; or however. But whatever the development of such directly contingency-shaped behaviors, they do not involve rule-following. The same ultimate behavior might also result from rule-following, but it is only a mentalistic bias which makes one suppose that complex human behaviors must involve rule-following. As Skinner states:

Nothing which could be called following a plan or applying a rule is observed when behavior is a product of the contingencies alone. To say that ‘the child who learns a language has in some sense constructed the grammar for himself’ (Chomsky, 1959) is as misleading as to say that a dog which has learned to catch a ball has in some sense constructed the relevant part of the science of mechanics. Rules can be extracted from the reinforcing contingencies in both cases and once
in existence they may be used as guides. The direct effect of the contingencies is of a different nature. (Skinner, 1966, p. 29)\textsuperscript{21}

To make the ball-catching analogy really apt, the sagacious dog must master not merely a few laws of mechanics, but in addition must derive the laws by fitting data to an extensive theory of mechanics (as Chomsky’s language learner derives a particular grammar by applying a theory of possible languages to the incoming data). Of course, if the dog had developed such a theory, and had derived some laws of mechanics, then it could do much more with the knowledge than just catch a ball. For example, it could also describe the trajectories of rockets, tell why a particular missile did not reach its target (insufficient force at launch, inaccurate angle of trajectory, or whatever), etc. On the same sort of grounds, we should resist the temptation to attribute knowledge of rules (and of theory) to competent language users. For ordinary, competent speakers of the language do not exhibit such surplus knowledge: that is, they show no signs of having developed and employed rules of the language, much less any general theory concerning all possible languages (on the basis of which the particular language rules are derived). They can use the language; but they are little closer to describing the rules of the language (or even a possible set of rules formalizing the language) than the dog is to formulating the laws of mechanics. They can say — generally — when a string is unacceptable, when it ‘makes no sense’; but certainly they cannot specify what rules have been violated. They can make use of a negative passive sentence; but cannot specify the transformations involved in generating it. And if confronted with sounds from what seems to be a foreign language, they can appeal to no theory of possible human languages (universal language structures) to determine whether the sounds are from a human language (actual or potential). In short, there are good grounds for supposing that language behavior is a very complex learned behavior. And language behavior can be described as in accordance with grammatical rules (and Chomsky has made very substantial contributions to the effective and elegant formalization of such a description). But the disanalogies between language behavior and rule-following behavior are sufficient to indicate that language behavior is more fruitfully considered not as rule-following behavior, but as contingency-shaped behavior that can be described as in accordance with a system of rules.

A second way in which mentalism may complicate attempts to explain language behavior is somewhat less direct. Since mentalistic explanation can deal with the severest difficulties with relative ease (especially when in league with a rampant nativism), excessive complications of syntactic competence accounts — complications which render the learning of syntax especially difficult to explain by means of general learning principles — pose it little problem. Thus the transformational linguist who, e.g., postulates transformations which necessitate distinctions between manifest and deep structure in kernel sentences,\textsuperscript{22} can then point out that learning theory is in principle incapable of explaining how such transformations could be learned, since (as Bever, Fodor and Weksel argue):

\textsuperscript{21}For more on rule-governed vs. contingency-shaped behavior, see Skinner, 1969, pp. 90, 121ff., 146ff., 166ff., 289ff.; and Skinner, 1974, p. 125ff.

\textsuperscript{22}For example, such a distinction results from the rule for affix-movement in the verb phrase (Chomsky, 1957, p. 39, rule 29ii).
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Often a correct formulation of the rules determining syntactic structure requires distinguishing between the order of lexical items in the sentence and in the underlying representation from which the sentence is derived. While contextual generalization might conceivably account for learning the former, it is patent that it could not account for the learning of the latter [since the learner has no exposure to the underlying pattern which must be learned]. (Bever, Fodor and Weksel, 1965a, p. 265)

And the mentalist can complete the argument by contrasting learning theory’s problems with mentalistic successes. But if the vacuity of mentalistic explanation is recognized, then the problems involved in offering substantial explanations for language acquisition may well lead to alternatives to the proposed transformation rules — equally simple and plausible — which would be more amenable to learning theory explanations.23 Thus mentalism not only directly causes excessive complexity in our views of cognitive activities, but also — because of its ready explanations — results in further complexities from the neglect of efforts to represent cognitive behaviors in a manner most accessible to explanation.

Wittgenstein’s work — in addition to providing arguments against mentalistic explanation — shows that the complexities of the mentalistic system, the complexities which must be there, are imposed by the system. We can now see the answer to

23Such an alternative is suggested by Braine (Braine, 1965, p. 275ff.; see also p. 282n.). The problem lies in some of the syntactic structure rules (proposed by some transformational linguists); specifically, the rules which require ‘‘ . . . distinguishing between the order of lexical items in the sentence and in the underlying representation from which the sentence is derived.’’ Braine’s suggestion is that this problem can be overcome through the use of discontinuous rewriting rules (expansion rules in which the next phase of the expansion may involve placing the constituents of the expansion on either side of the element to the immediate right of the element being expanded). Without such discontinuous expansion rules, arriving at the surface structure of some sentences will require the use of some transformational rule which changes the order of the elements in the final base string. The question is not whether a grammar can be written which substitutes such discontinuous rewriting rules for the transformational rules (the transformational rules revising lexical order); Bever, Fodor, and Weksel agree that this can be done (Bever, Fodor, and Weksel, 1965b, p. 289). The issue is instead whether such a grammar would be simpler (or at least as simple) as grammars which exclude discontinuous rewriting rules. This issue is complicated by problems with establishing a simplicity metric for transformational grammars. Does the elimination of a transformational rule reduce complexity more than the elimination of a base expansion rule? Do all continuous expansion rules have the same degree of complexity? Would one reduce complexity by swapping a continuous expansion rule and a transformation rule for a discontinuous expansion rule? As Braine notes (Braine, 1965, pp. 282-3n.), these are difficult questions — and their answers might well involve learning theory considerations. But in any case, Braine points out that if discontinuous expansion rules are allowed, then:

... the affix-permutation rule (Chomsky, 1957, p. 39, Rule 29-ii) would no longer be needed in the generation of simple declaratives . . . [and] it would not be needed elsewhere in the grammar either. This rule is the one which introduces the distinction between manifest and underlying structure into the auxiliary verb phrase, and the possibility of its total elimination (a gain in ‘‘simplicity’’ in the transformational part of the grammar) is one of the reasons for thinking that English contains discontinuous rules. (Braine, 1965, p. 282n.)

Whatever the outcome of this controversy, the point is that there are alternatives to the transformational grammars proposed — and some of these alternatives may be just as simple (assuming a legitimate simplicity measure can be found). Furthermore, the alternative, equally simple grammars might have the added virtue of being more compatible with work in learning theory (that is, they might reveal patterns the learning of which could be accounted for without having to tack on either task-specific innate propensities or unique learning procedures).
Chomsky’s recurrent complaint that Wittgenstein avoids doing anything of real significance; for Wittgenstein can reply:

Where does our investigation get its importance from, since it seems only to destroy everything interesting, that is, all that is great and important? (As it were all the buildings, leaving behind only bits of stone and rubble.) What we are destroying is nothing but houses of cards and we are clearing up the ground of language on which they stand. (Wittgenstein, 1958b, sec. 118)

And the sorts of explanations which he legitimatizes (by clearing away the mentalistic houses of cards) are especially those described by MacCorquodale as the simple-minded variety. Eliminating mentalism will not make the explanation of cognitive behaviors — especially language acquisition — easy. But it will at least bring the problems within range of legitimate explanatory efforts.

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