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Mind design and minimal syntax

By Wolfram Hinzen

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In the recent film *The Linguists*, David Harrison makes the provocative statement, "I don't see how you can justify devoting your research career to the syntax of French—a language with millions of speakers—when the skills that you possess could help document a language that is going to go extinct within your lifetime." Although on its face this is merely a statement about research priorities, underlying it is a whole world of thought about what linguistics research is. For Harrison, linguists should be documenting languages spoken in endangered cultures, not probing the grammars of well-studied, easily accessible languages. It is not too great a leap from a claim about the linguist's task—documenting languages—to a claim about the nature of languages: that they are cultural artifacts or specialized social systems, of value to researchers for largely anthropological reasons.

Such a focus on linguistics as an anthropological exercise stands in contrast to the view that languages are not social but formal systems, shaped not by the demands of external pressures but by internal mental constraints. Adherents of this second position may even go so far as to question the validity of talking about external languages at all. "Although there is *a* sense in which there are public and shared languages," writes Wolfram Hinzen in *Mind Design and Minimal Syntax*, "these notions are shifting and value-loaded, and therefore cannot be the subject of a naturalistic inquiry into the human language faculty" (139). When the very idea of externally differentiated languages is in doubt, a different set of research priorities is inevitable.

These two perspectives—the external and the internal—represent a fundamental divide between linguists. And particularly at issue in linguistics is the question of what "the subject of...inquiry" should be. For the externalist (the functionalist), the subject of inquiry could be anything that ostensibly shaped a language into its present form: cultural norms, the need for communication, or the slowly adapting psychology of the upright primate. But for the internalist (the formalist), language phenomena are secondary, almost accidental bits of data, and the real subject of inquiry is the human mind and what language tells us about its internal structure. This is the research program of Chomsky, and Wolfram Hinzen wholeheartedly endorses it.

A professor of philosophy, Hinzen approaches his subject with an eye on what language means for the philosophy of science. Hinzen presents a vigorous, sustained argument for certain

philosophical positions (internalism, rationalism, and classical naturalism), and Chomsky's Minimalist syntax is the proving ground for Hinzen's philosophical claims. Although daunting in its breadth, Hinzen's "overall aim" is straightforward: "to give formalism...a place in the current landscape of the philosophy of mind, and introduce the kind of study of the human language faculty—namely, generative grammar—that gives rise to my claims" (xi).

Central Ideas

Mind Design and Minimal Syntax can be understood in terms of three oppositions: Rationalism vs. Empiricism, Methodological Naturalism vs. Metaphysical Naturalism, and Internalism vs. Externalism. These contrasting viewpoints are evaluated by Hinzen in relation to the study of human nature—particularly, the mind—and the *perfect design* of syntax is defended as a vindication of Hinzen's Rationalist, Methodological Naturalist, Internalist stance. (The notion of perfect design, referred to throughout this review, is explained further below. The reader should be aware from the outset, however, that Hinzen's interest is in natural, not supernatural, design.)

Rationalism and Empiricism

Considered as a philosophical position, *Rationalism* is not a commitment to logic and rational discourse, that is to say, *rationality*. Moreover, *empiricism*, the position rejected by Hinzen, is not a commitment to *empirical methods* of inquiry.

Rationalism is instead a claim about the human mind: that the mind's structure exists prior to and is not determined by its experiences. Empiricism claims exactly the opposite: that the mind's structure emerges from and is determined by what it experiences. Both rationalism and empiricism are concerned with *mental structures*, the way that the mind processes and creates information, how it *represents* what it "knows." Hinzen advances the rationalist position that there are discrete (modular) mental structures responsible for many different mental tasks (a module that does syntax, a module that does spatial reasoning, a module that does arithmetic, and so on).

Rationalism and Empiricism intersect with syntax and design in this way: if a mind's internal representation of syntax is wholly determined by the mind's encounter with an external language—that is to say, it is determined empirically—then the structure of syntax could have any conceivable design, and it may be nothing like how natural physical or biological systems are designed. But if syntax is internally represented prior to the mind's encounter with external language data, that representation would be expected to exhibit formal features not unlike those found in other natural objects that are internally organized without reference to external pressures.

Methodological Naturalism and Metaphysical Naturalism

"Against metaphysical naturalism" is the title of chapter 2; but Hinzen's discussion of naturalism has little or nothing to say about God or the soul. Instead, Hinzen is adducing arguments against this claim: that only phenomena having physical properties are the proper object of scientific investigation. Objects such as human nature and the mind are treated by "metaphysical naturalists" as less real than things like the solar system or the lower intestine. The result of such a

metaphysical naturalism is a methodological dualism that requires one mode of investigation for "natural objects" (physical things) and a different mode for non-natural objects (mental things).

Against this methodological dualism Hinzen sets what he calls the Cartesian position: *methodological naturalism*, a commitment to treating *all* phenomena, not merely external or physical phenomena, as natural objects.

Hinzen's insistence on methodological naturalism is rooted in his claim that neither science nor philosophy can offer any principled basis on which to reject the mind as a natural object. The mind's apparent immateriality is, well, immaterial. In Newton's time, gravity as a theoretical construct was rejected from a physicalist bias. Newton's theory won the day, of course, and since then "physics has furthered this effective erosion of the common-sense conception of 'solid bodies' that began in Newton" (61).

Syntax and perfect design come into play at this point: in naturally arising physical systems, minimal (that is, perfect) design features best capture the organizational plan giving rise to those systems. To the extent that such design features are evinced by the organization of the mind, the mind and human nature are justified as natural objects worthy of scientific investigation in the same mode as other natural phenomena.

Internalism and Externalism

Here we come to the central antithesis in the book, and Hinzen argues for the necessary priority of the internalist outlook, which (unlike externalism) is capable of offering meaningful explanations of natural phenomena. What Hinzen rejects under the name *externalism* is a scientific approach that accounts for an object's internal structure—its nature—in terms of its functions, its relations to the external world. Externalism is *functionalist* in orientation. *Internalism* (that is, the *formalist* orientation) explains an object's internal organization—its design—independently of any external function.

Internalism is the dominant perspective in physics. To take an example from astronomy, the solar system has no (empirically attestable) function; it is not useful. But it does have an internal structure, a form that is assumed to be a complex instantiation of invariant physical laws. The solar system's design is what it is because nature's laws are what they are. And we learn what those laws are by studying things like the solar system.

Unlike in physics, internalism is a decidedly minority perspective in biology. Biologists in general are interested in functional explanations (in many cases, historical-evolutionary explanations) of biological phenomena. The design of biological objects is accounted for in terms of natural selection acting on populations. A biological object's usefulness to the organism's survival (the functions for which the organism uses the object) determines its form. But as Hinzen observes, natural selection acting on populations can account for nothing about an object's form; it can account only for the object's survival. The Neo-Darwinian Hypothesis provides a mechanism for preserving structures, but no theoretical account of how those structures arose.

The internalist perspective in biology is concerned with the formal design properties of a natural (biological) object without concern for the object's usefulness (its functions). The internalist grants that biological objects like the eye may indeed be useful in different ways to different organisms, serving a variety of functions. But fundamentally, the eye can be explained as a biological system that converts light to neural impulses, and any explanation of the eye should account for how the eye performs this *central task*. (A system's central task can and should be distinguished from its external functions.) The selective advantage that the eye gives to an organism is peripheral to what it is and what design features it evinces.

So, too, with syntax. "The study of adaption and conditions of existence [along the lines of Pinker's and Dennett's evolutionary psychology] is *no precondition* for the study of structure," writes Hinzen (103). The study of syntax as a formal system is possible independently of any theory about how and why syntax arose in humans historically. In fact, the study of form necessarily precedes the study of function: "Before resorting to an adaptionist account that aims to explain how something arises because of how well it works, we should know what trait it is that we actually have to give such an account of" (104).

Perfect Design

When Hinzen discusses *design*, he means the formal properties of a natural object. And when he talks about *perfect design*, he means those principles of organization that intuitively strike humans as elegant. A formal system gives evidence of perfect design when it "is as we rationally expect it would be, given the task it performs" (165). Perfect design is the design that we generally find in natural objects, so we should always assume that any object of inquiry will in fact possess these qualities. Idealizations that underlie scientific theories are idealizations about optimal design. When these design notions are challenged by the data, we look for a better understanding of what perfect design is, but we do not abandon the idea. "If light travels in a straight line between two points, this is what we expect. If it is deflected, this is what we seek to explain by looking at further conditions or forces in play" (165).

Although it is (apparently) uncontroversial to assume elegant design in physics, this assumption is generally rejected in biology. But once an internalist approach is adopted in biology, it only makes sense to assume that, like any other natural object, biological phenomena—including mental phenomena—exhibit the same basic design principles as non-biological phenomena.

Syntax...and the Mind

A major concern of the book is to argue that *human nature* is a natural object worthy of naturalistic scientific investigation. In particular, the *mind* is the phenomenon that must be studied to arrive at an understanding of human nature, and the structure of *human language* (syntax) is one component of the mind. So an internalist, formal account of syntax should tell us something about the design of the mind, which in turn should tell us something about what it means to be human.

The Minimalist Program advocated by Chomsky is the best-developed theory of language that makes internalist, formal assumptions regarding how syntax is organized (how it is "represented in the mind"). Formal syntax asserts that syntax is *autonomous*, that it is not determined by its external uses (say, communicating or deceiving or warning). Rather, it is a natural object exhibiting basic design features that we expect to find in all natural objects. In particular, syntax must be minimally (optimally) designed for carrying out its central task, "to pair sounds with meanings" (166). (Note that pairing sounds with meanings is not an external function but the defining task of syntax; the resulting mapping is then used by other cognitive systems for various functions.)

Hinzen introduces generative grammar in chapter 4, "Prior to Function," advancing many of the now-familiar arguments against externalist accounts of syntax. Chapter 5, "Beyond the Autonomy of Syntax," quickly gets to the heart of the Minimalist Program, and by the end of the chapter, Hinzen is willing to claim that minimal syntax can account for arguments, quantification and scope, and perhaps even reference and possession ("including predications of truth") (233). Throughout, Hinzen advocates a radical internalism, rejecting any theoretical mechanism that requires functional pressures on syntax. His final chapter, "Good Design!," continues his push for an optimally minimal conception of syntax, and he finishes the chapter with an argument for the innateness of concepts themselves (an argument fleshed out in Hinzen's 2007 *An Essay on Names and Truth*).

Hinzen's "Conclusions" moves from syntax to ethics, a seemingly odd shift until one considers that Hinzen has advocated a theory of the mind that rejects evolutionary psychology as an adequate account of mental structures. "It is a completely empirical question whether the apparent absence of functional design and external shaping we have found in language and concepts carries over to human morals" (276).

Though one may wish that Hinzen (or his publisher) had permitted more space for an elaboration of his internalist view of ethics, the book's scope is already expansive enough. In 277 pages (plus preface, references, and index) Hinzen explores several hundred years of philosophical thought, introduces the reader to the Minimalist Program, and makes a compelling case for internalism.

In his Preface, Hinzen writes: "[O]ne half of this book (Chapters 1-3), will speak more to philosophers, while the other half (Chapters 4-6) will speak more to linguists. But since my interdisciplinary effort is genuine, my hope is precisely to have linguists read the former half, and philosophers the latter, even though they might find just these parts occasionally more hardgoing" (xiv). This dual focus is exactly what makes *Mind Design and Minimal Syntax* so valuable. Considered merely as an introduction to Minimalism, the book is one of dozens, and certainly among the least accessible. But considered in terms of its aims—advocating the study of human nature in an internalist framework and presenting Minimalism as an example of just such a study—this book is well worth the work required to read it. *Mind Design* puts formalist syntax in its philosphical context, never losing sight of the reason for assuming minimalism in the first place: if syntax is a natural object, then (considered formally) it must be minimal, and the linguist's task is to vindicate—or disprove—perfect design in language.