Patterns in the mind
Language and human nature

For Amy and Beth

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Preface

During the first part of this century, the predominant view of the human mind, especially among American psychologists, was that it is purely a product of its environment. According to this "behaviorist" view, babies come into the world knowing virtually nothing, and, guided by rewards and punishments inflicted by the environment, learn the complex associations that determine the patterns of their adult behavior. Moreover, the behaviorists contended, a truly scientific approach must eliminate all mystical talk of "minds" and "thoughts"; proper objectivity confines us to the description of behavior.

An important challenge to this view arose in the late 1950s, when the young MIT linguist Noam Chomsky published his little book *Syntactic Structures*, followed by a blistering critique of B.F. Skinner's behaviorist manifesto, *Verbal Behavior*. Chomsky demonstrated that human language behavior can be explained only in terms of complex principles operating in the speaker's mind, principles that cannot be acquired by the simple mechanisms of association posited by the behaviorists. In so doing, Chomsky consciously identified himself with a tradition of "rationalist" thought stretching back to Descartes, a tradition that in fact continued actively in European psychology throughout the behaviorist period in America.

Chomsky's work was one of the early landmarks of what came to be called the "cognitive revolution." Along with cognitive psychology and artificial intelligence, Chomskian generative linguistics breathed new vigor into the study of the mind, a vigor that continues unabated in today's cognitive science and neuroscience. The mind (or the "mind/brain," as it is often called) is now widely viewed as a complex information-processing device, a sort of biological computer, made up of numerous parts devoted to specialized tasks—a far cry from the simplistic behaviorist view. It has even become possible and fashionable to do research on those forbidden fruits, mental imagery and consciousness.
I’ve written this book because, despite the influence that generative linguistics has had on the study of the mind and brain, its leading ideas have not become generally accessible. Having spent a quarter of a century immersed in research based on these ideas, and nearly that long conveying them to undergraduate classes, I felt it worth trying to convey my fascination and that of my colleagues to a broader audience. Maybe it is only the self-centered presumption of a practitioner, but I love this material, and I have come to believe that it ought to be part of every educated individual’s intellectual repertoire. The conceptual foundations of linguistics are every bit as exciting as those of evolution, genetics, cosmology, chaos theory, and quantum electrodynamics—and perhaps more so, for what they tell us about our innermost selves.

In laying out the book, I have drastically compressed the mass of intricacy that has become the linguist’s stock in trade, while still trying to convey the flavor of current thinking. In selecting the material, I found to my delight that much recent research strikingly confirms and amplifies many of the classic hypotheses and analyses of twenty and twenty-five years ago. Thus, rather than describing the work in any sort of historical order, I have found it more interesting to give an overall picture of where things stand now, supported by the interweaving of older and newer results.

My goal is to offer the reader a few evenings of engagement with the ideas of modern linguistics, without a great investment in technical detail. It is my hope that it can be appreciated by interested laypeople and by professionals in related fields, and that it can also serve as supplementary reading for undergraduate courses in linguistics, cognitive science, psychology of language, and philosophy of mind.

* * *

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A terminological caution

It is common in everyday speech to use the term “linguist” to refer to someone who speaks several languages. In this book, however, I have used the term “linguistics” in its standard professional sense, to refer to the study of the organization of language; a linguist is someone who examines the structure of one or more languages in an attempt to discover general principles. A linguist tends to know a lot about various languages and may or may not speak them. For someone who speaks a lot of languages, I prefer the terms “multilingual” or “polyglot”.
PART I

The fundamental arguments
1 Finding our way into the problem: The nature/nurture issue

Why are we the way we are? Are we born that way, or are we products of our environment? Or some mixture? These basic questions lie at the root of any inquiry into human nature.

These questions can be interpreted in various ways. Most often, I find, people tend to think of "the way we are" in terms of differences among individuals: one's "nature" is seen as an issue of metabolism or intelligence or personality. What makes one person fat and another skinny, one sociable and one shy, one good at math and another good at art? Could they have been different if they had been brought up differently? Which things about ourselves can we change, and which are we fated to live with?

Another frequent interpretation of "the way we are" is in terms of differences among groups. Could people differ in intelligence, social behavior, or moral qualities along lines of race or gender or culture? If such differences exist, are they products of heredity or the environment? Far too often, alleged hereditary differences among groups have been used to justify repression, then "supported" with pseudo-scientific evidence. For the moment, let me only observe that even if such differences should exist, they provide no grounds, scientific or moral, for wholesale repression.

The main issues of human nature I want to think about in this book, though, are at the level of the species: What makes human beings the way they are? How are we different from animals? How are we like other animals and different from computers?

In order to find out what makes us the way we are, it stands to reason that we have to look closely at the way we are. If we want to know the balance of responsibility between nature and nurture—and how much about ourselves we can change—it helps to have a better idea of what the combination of nature and nurture is responsible for. In this book, I want to use human language as a vehicle for examining "the way we are."
I have two reasons for choosing language as a focus. First, the possession of language has always been regarded as one of the major differences between us and the beasts, so it's important to find out just exactly what we've got and they haven't. (We'll see in the next chapter how human language differs from other animal communication.) Second, and to me more important, the modern study of language has uncovered complexities of the mind far beyond what anyone would have imagined thirty years ago—complexities that draw on evidence from, and have implications for, fields as disparate as neuroscience, child development, philosophy, and literary criticism. Consequently, understanding language offers the prospect of integrating biological and humanistic views of "the way we are."

How might we bring language to bear on questions of human nature? One natural way is to ask: How is human experience affected by the fact that we can all speak and understand a language? A number of answers come to mind pretty easily. Most obviously, by virtue of having language, we have access to history: our ancestors have conveyed to us, through either written documents or oral tradition, a record of what happened before we were born. Along with history, we get our culture's accumulation of technology, world views, and rituals—not to mention legal systems, propaganda, gossip, and jokes. Little of this, if any, could be transmitted without language.

Another thing that language does for us is make it possible to coordinate the actions of large numbers of people. A bird's alarm call can make a whole flock flee at once. But people can communicate more differentiated things such as: "When I give the signal, you people over there pull on your ropes, and you people here let go of your ropes, and you other guys over there push like crazy." This kind of directed and coordinated action is hard to imagine without language, and it's necessary in order to do things like erect large structures, a hallmark of advanced civilizations.

The advantage that language is perhaps most often said to confer on us is that it enables us to think. While there is a great deal of truth to this idea—language certainly is invaluable in helping us sharpen certain kinds of thoughts—we should be a little cautious about endorsing it entirely. For one thing, we probably don't want to deny the capability of thought to at least some animals. For another, not all human thought requires language. Did it take thought for Beethoven and Picasso to produce their masterpieces? (I think so.) Did it take language? (I don't think so.)

Whatever the precise relation of language and thought, though, it is undeniable that human existence is deeply affected by the ability to speak and understand language.

In this book, however, I want to ask a different question about the relation of language and human nature: What does human nature have to be like to account for the fact that we can all speak and understand a language? That is, I want to discuss not the consequences of having language but rather the prerequisites for language: What do we need in order to be able to talk?

It's hard to think up plausible answers to this question. Or rather, the answers that spring immediately to mind turn out to be less than persuasive. For instance, one possible answer is that we have language because we have bigger brains than (other) animals. Let's be a bit more careful, though. After all, there are other animals with big brains—elephants and whales have brains bigger than ours, and the brains of bottlenose dolphins are larger in proportion to body size than ours—but they don't have language (or if they do, it's nothing like human language).

It's natural to think that a big brain makes us more intelligent, and because we're more intelligent we've figured out how to talk. But in what ways does a big brain make us smarter? As we'll see, it's not so obvious how being smart in and of itself makes talking possible.

In fact, there is a basic difficulty with an explanation that relies just on brain size. For now, it can be stated like this: you can't always get an entirely new function out of a device just by adding more of the same parts. To take a crude example, you can't get your car to fly by adding more cylinders to the engine, or more speeds to the transmission, or more wheels or bigger windows. Its existing function of carrying you along the road comfortably may be improved in some way, but the damn thing still only travels on the ground. To get it to fly, you need some sort of structural innovation like wings or a helicopter rotor. A major theme of this book is that the same is true of the brain and language: expanding a monkey's brain to the size of ours would still not enable it to talk. Beyond size, there has to be some difference in the way our brains are put together.

For the moment, the main thing is to appreciate how hard a problem this is. The fact that we can talk (and cats can't) seems so obvious that it hardly bears mention. But just because it's obvious doesn't mean it's easy to explain. Think of another perfectly obvious, well-known phenomenon: the fact that metals turn red when you heat them enough. Why does this happen? It could be otherwise—
they might just as well turn green or not change color at all. It's a simple phenomenon, easily observable, but the explanation isn't simple at all. It turns out to involve at the very least the theories of electromagnetic radiation and quantum mechanics, two of the more amazing intellectual advances of the past century. So it is, I want to suggest, with the human ability to use language.

The basic parameters underlying a theory of language ability were first laid out in the late 1950s and early 1960s by Noam Chomsky, who can justifiably be called the creator of modern linguistic theory (and who is, at the time of this writing, still doing pathbreaking research). I am going to lay these parameters out in a form that I'll call the two Fundamental Arguments. Just to give you an idea of where we are going, let me state them in very abbreviated form:

The Argument for Mental Grammar:
The expressive variety of language use implies that a language user's brain contains a set of unconscious grammatical principles.

The Argument for Innate Knowledge:
The way children learn to talk implies that the human brain contains a genetically determined specialization for language.

These two arguments lead us to the conclusion that the ability to speak and understand a human language (say English) is a complex combination of nature and nurture. Moreover, the part coming from nature involves more than a big brain: it is a specific human adaptation for language learning and use. The next two chapters will work through the Fundamental Arguments; Parts II and III will be spent explaining, qualifying, and elaborating them.

Part IV places the Fundamental Arguments in a larger context. It asks: If the human brain contains unconscious grammatical principles and a genetically determined specialization for language, what are the implications for other aspects of human behavior and experience? We will see that language is a revealing microcosm of the mind as a whole—that similar characteristics emerge in activities as disparate as seeing, thinking, listening to music, and taking part in a social environment. Along the way, we will present a third Fundamental Argument, whose consequences are perhaps even more radical than those of the first two: