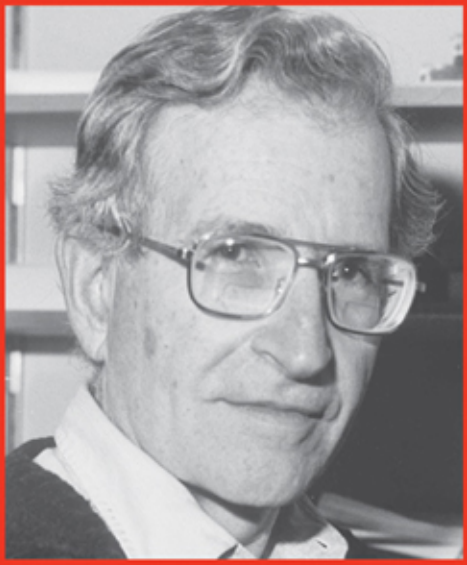
THE CAMBRIDGE COMPANION TO

Chomsky



Edited by JAMES McGILVRAY

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The Cambridge Companion to Chomsky

Noam Chomsky is one of the most influential thinkers of modern times. The most cited writer in the humanities, his work has revolutionized the field of linguistics, and has dominated many other disciplines including politics and the philosophy of mind and human nature. He has also contributed significantly to our understanding of the abuse of power, and of the controlling effects of the mass media.

This companion brings together a team of leading linguists, philosophers, cognitive scientists, and political theorists to consolidate the disparate strands of Chomsky's thought into one accessible volume. Through a range of chapters focusing on the various aspects of his work, they introduce in a clear and non-technical way the central themes of his extraordinary effect on our understanding of language, mind, and the abuse of political power, and provide an engaging insight into the connections between Chomsky's work in each of these areas.

Comprehensive and informative, this is an essential guide to one of the leading intellectual figures of our time.

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Introduction

James McGilvray

At the time of writing, Noam Chomsky has produced over eighty books, hundreds of articles, and thousands of speeches. He has given thousands of interviews, written countless letters, and supervised scores of theses. He has made important, sometimes groundbreaking, contributions to three areas – linguistics, philosophy of mind and human nature, and politics. He set linguistics on a successful naturalistic, biologically oriented scientific course; his theoretical contributions continue to lead the field. Like Descartes, Galileo, and Hume, and unlike the eighteenth-century philosopher Kant and the great majority of philosophers thereafter, Chomsky is both scientist and philosopher, and his philosophical work is continuous with his scientific. His science of language and incipient science of mind offer a genuine prospect of coming to a biologically based grasp of human nature and of the way it allows for human understanding and action. His political work, like both Hobbes's and Rousseau's, seeks a foundation in a science of human nature, although with better prospects for developing such a theory – and for exploring its implications for political ideals and goals – than Hobbes's misguided attempt to construct a causal theory of human action or Rousseau's fanciful assays into a "state of nature." And unlike both of them – and far too many contemporary political "theorists" – there is no sign in Chomsky's political work that his views and critical analyses are driven by a wish for power.

One purpose of this volume is to offer to a general audience several people's perspectives on Chomsky's contributions in linguistics, philosophy of mind and human nature, and politics. The first chapter in each section provides an overview of Chomsky's views in these areas. Succeeding chapters develop major themes. I sketch some of those themes and how contributors develop them near the end of this introduction. A sketch suffices: the chapters and organization are self-explanatory.

Chomsky the scientist of language

Linguists in the Chomskyan tradition think of themselves as natural scientists – not social scientists, and not engineers. It is important to see what this implies.

Ordinary usage is little help. The term "science," like "language," has no unique use in everyday speech: people apply it to everything from physics to astrology. And – in part because being a scientist is associated with expertise, specialized knowledge, intelligence, etc. – the desire for social status and political authority leads to applying the label "scientist" to some questionable candidates. Given this, we cannot expect more than a few hints about what science for the Chomskyan is by looking to the practices that have been called scientific, or to the range of people who have been called (or call themselves) scientists.

A more reliable source is the history of science and the shapes of the sciences that are universally agreed to be successful – physics, chemistry, biology . . . Their subject matters and degrees of progress differ, as do their principles, experimental techniques, and outstanding problems. There are, however, enough similarities to draw a composite sketch, especially where the characteristics chosen agree with those from other reliable sources.

Another such source is what those who began the development of successful sciences said they were doing. Chomsky often mentions Galileo and Descartes in this regard (e.g. 2002b); he considers himself to be working in a tradition of philosopher-scientists that they began. These pioneers developed and applied recommendations for how to proceed in carrying out investigations of natural phenomena that led to what were for their times remarkable successes. Focusing on Descartes in his *Discourse* – a work that explains how Descartes came to his scientific principles, says what they are, and outlines what he accomplished by using them – it is striking that he divorces science from another kind of understanding of the world. No one uses scientific concepts in solving the myriad problems encountered in everyday life. Everyone, including the young child and the scientist, has and uses what Descartes called "bon sens" ("good sense"), a practical form of problem-solving capacity that Descartes considers innate – a gift from God. "Bon sens" is sometimes translated as "common sense," and I will adopt that term. It is a capacity to deal with the problems of politics and commerce, doing the laundry, consoling a grieving friend, and putting out the dog.

While everyone relies on common sense, it does not assume a single form for all times and all circumstances. This is a benefit. Practical problem-solving must accommodate differences in method and individual style, different environments, cultures, and social organizations, and so on. To do so, common sense must rely on rich and productive native (innate) resources and a flexible form of mental organization. That is how it can arise so early in children and be so remarkably adaptable. Where Descartes said that *bon sens* is a gift from God, we are likely to say that its rich resources are biologically based. It is only thus that we – even the very young – can so quickly conceive, anticipate, and adapt to different environments, adopt (even if only in play) different social roles, and quickly change to meet unanticipated contingencies.

The contrast to science is instructive. Science is an intellectual project that – where successful at all – uses formal (mathematical) theory-construction techniques to focus on specific domains; it is guided by a desire for simplicity and – as Galileo and Descartes's work shows – it places simplicity before "data"; it makes progress (often in jumps) over centuries through contributions from many people towards solutions to the theoretical problems it constantly confronts, revises, and refines; and it creates its own standards of intelligibility (Chomsky 2002b: 68) that are far from the practical concerns of common sense. Physics, for example, has taken centuries to develop, has advanced in spurts, uses mathematical techniques to describe a world populated by entities and processes beyond the ken of commonsense understanding; and while no doubt far from complete, it has obviously progressed well beyond Galileo's and Descartes's "mechanical philosophy." This punctuated but deliberate pace is probably necessary because science does not rely on the rich and productive native systems, flexibly organized, that common sense utilizes. While it can and obviously does rely on apparently innate senses of simplicity and what counts as a good explanation and description (Chomsky 1980), construction of the theories that solve the problems science confronts requires invention, favorable conditions, and cooperative activity. That is why – with the exception of parts of mathematics – only rudimentary forms of natural science developed before the end of the sixteenth century. Unsurprisingly, it also takes a considerable amount of time and training for individuals to acquire sophistication even in a specific science; the full range of the developed sciences is out of the reach of everyone. Fortunately, science's findings are not needed for survival, or even to thrive. No doubt doing laundry benefits from engineering applications of fundamental scientific principles – those that lead to variable-speed electric motors and front-loading washing machines. But for millennia people managed with technology that required only the engineering solutions offered by unaided common sense. They built bridges of various materials, annealed metals into Samurai swords, and constructed cathedrals. In sum, science brings the developed formal tools of highly focused inquiry to bear on theoretical problems; progress – relying as it does on invention – is usually slow. Using their common sense, people utilize native resources, perhaps in forms of practice that have led to practical success before, to deal with the immediate demands of everyday problems. We invent scientific tools to deal with bosons and genomes; we depend on native resources to critically assess the performance of an elected representative – or the intentions of an artist.

One of the characteristics of scientific practice that science's history reveals is seeking a particular kind of objectivity – one that is universalized, so that it is not tied to person, circumstance, culture, or history. That notion of objectivity cannot serve the tasks that common sense deals with; commonsense understanding's concepts are "designed" to serve matters of human interest – including

those of perception and action. It should be no surprise, then, that science can lead to denials of the "obvious" claims of commonsense understanding. Sciences of the mind tell us that the colors we experience are products of our visual systems, not "on" things outside, and that languages – including their sounds and meanings – are native and in the head, not somehow outside the head, perhaps products and properties of communities and polities. Scientists often must ignore appearances (as in colors and words outside the head) and invent, using the tools that mathematics – much of which is invented too – provides. And they must measure progress not by how well a proposed change in a theory satisfies untutored opinion or "raw experience" but by improvements in description and explanation of the relevant phenomena and greater formal simplicity. Descartes – had he lived long enough – would have seen his contact mechanics refuted by Newton's gravitational principle. The "obvious" idea that action and effect require contact seems to have its origin in common sense; it fails in science. Physicists learned long ago that the apparently obvious is at best a starting point. That lesson has been hard to learn with language, as we will see.

Chomsky's science of language is a science in the Cartesian–Galilean tradition. It is a branch of the study of biology. It is a naturalistic science that provides an "abstract" description and explanation of a biological system found only in humans, the system that Chomsky calls "the language organ." The language organ revealed by Chomskyan science of linguistics is far from the commonsense idea of a language as a social phenomenon. To reveal this organ, the science of linguistics had to develop standards of intelligibility that were consonant with those of the natural sciences, not with what some philosophers call "granny's view" of language. The result, after several decades of work, is that the language organ appears to be remarkably simple in its "design." This is unusual in biology, a domain that usually reveals what Jacques Monod calls the "tinkering" of evolution. Apparently, extending naturalistic science to the study of a biological system of the mind yields a fascinating result: language confirms Galileo's and Descartes's vision of a well-designed, elegant nature.

Descartes's mechanics – even in its rather primitive form – conflicted with the "obvious" principles taught by church and universities. It conflicted with the teleological world of Aristotle, modified by the seventeenth century to suit Christian doctrine. That is why his and Galileo's novel mathematical–mechanical theories of natural phenomena faced opposition from philosophical and religious systems that, like many today, take their task to be that of defending ideas that have their origin in common sense with its practical, not theoretical orientation. Successful sciences since Galileo and Descartes have continued to use simple, elegant, formal mathematical tools and invented theories and concepts to provide descriptively and explanatorily adequate theories of their domains. Like Galileo's and Descartes's sciences, they continue to be opposed, although some of the opposition is muted by the obvious success of the theories.

Chomsky's naturalistic inquiry into language, like Descartes's into cosmology, physics, optics, and neurophysiology, also gets opposition from the experts. Opposition comes from several fronts, but most seem to proceed on the assumption that language is not a natural phenomenon. They see language in terms of its use – perhaps as a set of social practices, a bunch of "tools" we have made to communicate, etc. In each case, one finds a version of what Chomsky calls an E-language approach to theorizing about language (external approach). Among the majority of philosophers, it appears as insistence that one or another form of the "obvious" idea that language is an institution created by humans to communicate – a "practice," a product of history, a set of habits, an "interpretive medium," a mode of communicating a speaker's intentions. From psychologists, philosophers, and other cognitive scientists wedded to one version or another of what Steven Pinker (2002) calls the "blank slate" picture of the mind, it comes as the idea that it is a form of behavior that solves cognitive problems such as classifying, describing, etc. Any organism or device that displays the "same" behavior has a language, they believe, and they "get" it by whatever means (training, programming) the blank slate advocate employs. So getting an ape (on which see Petitto, this volume) or a machine to simulate the behavior "proves" that language is not a biological organ with which only humans are born.

Perhaps these experts succeed sometimes by some standards – it is not clear which – but not by those of naturalistic inquiry. Philosophers who think language is a social phenomenon that children learn from their community ignore the fact that languages are quickly acquired by very young children without training. The same is true of concepts of social role. If neither language nor concepts of social role (and much else) is taught, they must somehow be built into the child's mind at birth; that is where to focus naturalistic inquiry. And blank slate advocates need to learn the elemental lesson that it is unwise to focus attention on sameness of behavior or "output" and the means by which these are induced. Even if one succeeds at getting a machine or ape to "speak" – it has not happened, probably for reasons that Descartes (and Alan Turing) pointed to – that is no proof that the systems that make this behavior possible (which is where Chomsky focuses his work) are the same as the ape's or the machine's. Manufacturing an excavator to dig ditches hardly proves that human gravediggers moving shovels with their articulated arms have hydraulic systems in their arms activated by diesel-powered compressors.

Chomsky on biology and evolution

To avoid confusion that might arise from speaking of Chomsky's view that language is a biological organ, I need to mention the matter of evolution (for detail, see Jenkins 2000). Chomsky, like Richard Lewontin (1990), has little sympathy for current efforts (e.g. Pinker & Bloom 1990) to try to show that

language – especially in the form of the basic computational system that links sounds and meaning to produce a discrete infinity of sentential expressions – is the product of some sort of natural selection that tracks increased reproductive advantages afforded to those who are (on the Pinker–Bloom story) better communicators. Chomsky does not doubt that language evolved, in some sense: it is biologically based and appeared in the human species. And he has no doubt that it has proven to be extremely useful to humans. But selection-for-communication, selection-for-some-function-or-another, and even selection, period, do not exhaust the field. *Pace* Pinker and Bloom, there are alternatives.

One problem with the attempt to show that language was selected by reproductive advantage is that humans as a species have been relatively stable for a long time – probably 100,000 to 200,000 years. So language in the form of the basic computational system that seems to be unique to us must have emerged somewhere between now and 100,000 to 200,000 years ago. (The best current guess is approximately 60,000 years when the migration from Africa began.) It is all but impossible to find *evidence* in observable phenomena for the selectional emergence of such a system. Perhaps we will someday identify the computational-system specific gene(s) that provides us our languages' syntax; perhaps too by investigating remains we could say when this gene was introduced. But nothing would tell us why and how it developed. Speculation about selection-for-*any*-function of language's computational system (its "syntax") seems to be empty.

But that is not all that needs to be said. For one thing, while looking for a historical record seems hopeless, we can compare. Hauser, Chomsky, and Fitch do just that in their article in *Science* (2002). Comparison offers no immediate help to the Pinker–Bloom selection-for-communication cause, however: language's basic computational system can produce a discrete infinity of sentences, and there is no current evidence that other species can "express" discrete infinities of elements of *any* sort. For example, no other species enumerates arbitrarily large numbers of elements in a set by counting them out. But perhaps we have not looked far enough. Most comparative studies focus on human and animal communication systems; perhaps the computational system is found elsewhere. In concluding their discussion, Chomsky and his co-authors suggest looking at other kinds of system: look, they suggest, for non-communicative systems that rely on a recursive computational procedure that provides for a discrete infinity. Perhaps they will be found in navigational systems, or those that "parse" social relationships. If there were such a system, it – or its homologue or analogue in the developing human species – might have been exapted (coopting a system adapted to serve another function) for language. Selection-for-communication would fail, but perhaps aspects of the selectional cause would be salvaged. It is a project worth trying.

In his own work, Chomsky suggests we look wider still. Darwin pointed out that selection is only one part of evolution. And there are other, non-selectional traditions of biological development and speciation. One such tradition is found in Stephen Jay Gould's and Richard Lewontin's suggestion (1979) concerning "spandrels" – structural consequences of other, perhaps selected, systems. Another tradition, perhaps related, goes back to Goethe and his discovery of an Urform for plant morphology (cp. Chomsky 2002a: 66). Goethe thought he had discovered a formula that predicted all (biologically) possible forms plants could take. If there is such a formula, it indicates that there lies in plant morphogenesis a physical factor that yields very different-appearing plant forms (and "species"), given slightly different "input" conditions. The formula and different physical conditions, not selection, would account for differences. That tradition was represented in the nineteenth century by several individuals in Europe and, in the twentieth century, versions of it appeared in mathematical form in the work of D'Arcy Thompson (1917) and Alan Turing (1952). Many have pursued their suggestions; there is a growing mathematical science of morphogenesis.

Chomsky sometimes suggests (2002b: 57) that the development of the language organ might be explained as a mathematical consequence of the kind of complex form of mental biology humans have. Even selection has to operate within the "channels" provided by basic physical processes, after all; and our language faculty appears to be too "perfect" a solution to linking sounds and meanings to be the result of selectional tinkering. Perhaps the computational system built into our languages is "anticipated" in those physical processes and structures and arises "by itself" when other systems are in place. This would allow that the computational system of language came about as a complete package, perhaps 60,000 years ago. Or perhaps language is a spandrel. Either way, we abandon the gradualist, "historical" form of development and biological differentiation (and the "tinkering") that the selectional picture relies upon. We might even be able to find evidence.

In sum, while there is no doubt that language has proven to be an extremely useful biological faculty that has given the human species extraordinary cognitive advantages, there is little reason now – and there may never be – to hold that the computational core of the language organ developed slowly over a long historical period by virtue of affording reproductive advantages to successive generations of communicators.

On the unity of Chomsky's thought

A person's intellectual work as a scientist need not be connected to his or her political views – there is no reason, for instance, that a biochemist's scientific work should have anything to do with her neoliberal views. But Chomsky's

linguistics and his political views seem to be special cases, particularly when one takes into account his philosophical/scientific work on the human mind and human nature.

One reason to look for connections and perhaps even a degree of convergence in all three areas of Chomsky's work is that each has, in its own way, something to say about human beings. More narrowly, each focuses on distinctive features of human beings – on language, a biologically unique mental faculty; on our distinctive natures and minds with their limited but biologically unparalleled intellectual capacities for dealing with both practical and scientific problems; and on those apparently unique forms of social organization that we think of variously as polities, communities, societies, and/or cultures. No other organism creates for itself organized groups of non-kin individuals in ways that allow for cooperative, non-contact, coordinated ways to meet needs and solve problems.

Some non-Chomskyans think that there is a connection between language and culture or community. Philosophers as varied as Foucault and Putnam and psychologists as different as Piaget and connectionists share the assumption that language depends on the society, culture, community (etc.) in which one is raised. By "depends" I mean not just that children born into a group of Japanese speakers come to speak Japanese; everyone acknowledges that and tries to explain why it happens. Rather, they take language to be *constituted by* the society or community in which one is born. This idea often appears as the view that children are taught the language of their community by their elders: the elders know the "rules of correct usage/correct practice" (given relevant circumstances) and instruct by encouraging correct verbal responses and discouraging incorrect. People (as a group), over a long historical period, are believed to have invented the practices that define a specific community, culture, etc. and, while doing so (or perhaps in doing so), to have also invented language – another form of practice that happens to allow individuals to communicate, coordinate, etc. Individual creativity in the exercise of one's intellectual powers does not figure in this story; the focus is on community practices/habits/rules for applying words correctly, etc. If defenders of this idea speak of human nature at all, they make it a historically conditioned notion: as people's fundamental practices change, people's social/cultural "natures" change. Alternatively, they might say that human beings are plastic (people are intellectual/cultural blank slates), so that human social/cultural natures are – unlike those of any other biological species – molded by the societies, cultures, etc. in which they are born.

Chomsky's view of language and the mind reverses priorities. For him, human languages are not expressions of culture and society – in effect, human artifacts. They are, in a sense, expressions of our genes: all the existing and possible natural languages (not technical symbol systems, such as those found in the sciences) are biologically encompassed within what he calls "Universal Grammar." If there is any dependency between language so conceived and society, culture,

etc., it cannot make culture the condition of language. If anything, culture (etc.) depends on language. Suggesting that culture depends on language in this sense is not making a causal or deductive claim. The language organ does not secrete cultures or social arrangements. Rather, language provides the rich, unlimited set of conceptual structures (Chomsky informally calls them "perspectives") and the opportunity to communicate them that humans need to conceive of alternative ways to solve the problem of how to live together to the benefit of all, to discuss and come to agreement on the options, and the like. In effect, language and our other cognitive resources, but especially language, make it possible to create cultures and much else. Adopting this point of view – that native conceptual tools, and especially language, must be in place before articulated conceptualization and understanding, much less discussion, can occur – another matter falls into place too. Individual creativity – a curiosity on the culture-first approach – can now be seen as benefiting from the infinite scope of linguistic output of which our systems are, in principle, capable.

To see why language should have a central role in making sense of how we come to create our diverse communities and cultures – and individual cognitive and expressive styles – it is important to keep in mind that humans are the sole species to have language. Many other species have communication systems. And some others also have the "performance" systems that are involved in human language: auditory perception and production (for speech), visual perception and aspects of articulatory shaping (for sign), plus aspects of those resources that Chomsky calls "conceptual and intentional" – those non-linguistic resources that can be brought to bear on circumstances to yield various forms of intelligent behavior. But no other species has the capacity to develop a potentially infinite, *discrete* set of mental "outputs" in the form of expressions or sentences that link perception-related configurations, whether sound or sign, with conceptual materials (Hauser, Chomsky & Fitch 2002). That is, no other species can produce – apparently at will – innumerable sets of sentences or expressions. Given the obviously central role of language in human thought and action, our distinctive mental capacities – found in both practical and theoretical problem-solving – may be due, in large measure, to language. And, with these capacities, we also can develop social organizations: we can plan, organize, decide to cooperate, and create institutions. It becomes quite plausible that culture and our various forms of social organization depend on language rather than the other way around. So we have one connection between the areas Chomsky works on: the science of language might well provide the key to what is distinctive to our minds and natures, to making sense of why we have the distinctive mental capacities we do and, in turn, making sense of how we can create our various forms of social organization.

Another kind of connection depends on the fact that views of human nature are always behind people's attempts to justify their moral and political principles. In the background of every political and moral "ism" (including those largely

indistinguishable forms of corporation-dominated plutocracy–oligarchy called "neoliberalism" and "neoconservatism") one finds assumptions about human nature – about what human beings "are" and what they are or are not capable of. These views of human nature typically play a justificatory role. "That's a silly view of democracy," someone might say of the fully participatory form Chomsky favors, "people (of their natures) don't have enough interest, intelligence, knowledge, or time to participate fully. We must give an elite managerial class the power to make decisions and run the economy, government, courts . . ." Someone else might say: "People are naturally aggressive and acquisitive. A good form of government must have full authority to restrict their unchecked exercise (a Hobbesian state of nature); we need authoritarian government to provide a form of rescue."

While justification of this sort is common, few of those employing it bother to elaborate their view of human nature. And the connections between whatever degree of articulation one finds and the moral/political/religious . . . claims they are supposed to justify can be quite hazy. Moreover, there is little if any effort to show that one's view of human nature is itself justified by the standards of empirical inquiry. A biologically based science of human nature would avoid these problems. Appeals to gods and revelation, or to what seems to be obvious to some group or another, are almost always self-serving efforts which reveal a desire to place or maintain oneself or one's group in a position of power or authority. We need a detailed, objective view of human nature, and scientific inquiry can provide that. It alone can say what is distinctive about our natures – as opposed, say, to those of various other primate species.

A plausible way to focus such an inquiry would be to look for aspects of the human mind that are distinctive – for faculties or forms of mental organization that humans have that other primates lack. The faculty of language, clearly, is such. A science of language and of what language provides humans should thus have an important role in such a science. Not only does language seem to be unique to humans, but it also seems to contribute to a unique form of mental organization. The biological faculty/organ of language acts rather like a central cognitive system, allowing us to coordinate materials provided by other cognitive systems in ways that other creatures seem to be unable to manage. And, of course, it provides the conceptual tools to allow us to speak of anything, anytime. In these and other ways, it enables us to "solve problems" in a wide variety of manners. It is almost as if language allowed our minds to be "universal instruments," to use Descartes's *Discourse* terminology. So Chomsky's science of language, even in its incomplete state, represents a good beginning to a science of the human mind and, thus, of human nature.

While the science of human nature is in its earliest stages, we can use what we have now to begin to think about how to craft a good society. We cannot move directly from biology – specifically, the biology of the human mind and

what it provides us (for these are what make us distinctive in ways that we so obviously care about) – to a picture of an ideal. We must start by deciding what an ideal society should accomplish – what its function(s) should be. For social organizations are institutions, made by human beings, and a good one should fulfill its function well. A plausible suggestion is that the function of a human society is to meet not just the needs of survival, but those that are characteristic of the kinds of creatures we are. Call these characteristic needs of humans "fundamental distinctively human needs." Now what the science of mind tells us about language and the rest of the mind, and about how people use these cognitive tools, can come into play. To be brief, because we have language and language seems to be the key to our extraordinary mental capacities, we alone seem virtually designed to be creative creatures. Our languages provide an unlimited range of "perspectives" (Chomsky 2000a: 150, 180), and these can be – and are – used to serve all sorts of purposes, including those of art and labor. Language's unlimited range comes to play a role in virtually all our affairs – not just our thoughts and efforts to understand others, but in our jobs and everyday tasks, even putting out the dog. An ideal form of social organization must, then, give individuals ample opportunity to exercise their creativity. This need not mean that we must all become craftsmen and painters or composers. It might mean that if we labor with others in a factory, we have sufficient freedom and opportunity to fully contribute to all decisions that concern us, to bring about change, and to otherwise control the conditions under which we work. Or it might mean that operating an excavator, we not only do the job well and with a concern for those who will use what we do, but with a form of artistry.

Another candidate for a fundamental need is that for community, friendship, love, and nurture. It is only if one thinks of this need as that of an animal that is also "bred" for freedom and creativity, though, that the need for community becomes distinctively human. Many other primates display in their behaviors a need for association for mutual benefit. But the range of options available to them and the forms of organization that they can conceive are very much more limited than ours. They do not seem to be able to conceive alternatives, choose, and plan. Their "institutions" are suited to specific environments, with specific forms of threat and opportunity. They do not seem to be "made." And there is little change in them.

The experiments of history lead to a similar conclusion about fundamental, distinctively human needs: people need to be free and create while integrating this with ways of associating with others. Where we find people willing to make considerable sacrifices for goals other than mere survival (sacrificing for the young and future generations, revolting against oppressive authority, rejecting slavery – Chomsky 1988b), we can plausibly assume that the goals of the sacrifice represent fundamental needs – trumping even those of survival. History also suggests which forms of organization best meet needs. It reveals people in

various forms of social organization in various environments. Investigating, we find cases where people resist the forms of organization they find themselves in and aim to improve them. Equally important, we look in the directions that they seek improvement, and we note the success of the solutions they work out. And where there is progress in meeting these goals in the social organizations that develop, we note that. There are complicating factors – as always, where there is entrenched power. And the tools of power have become increasingly sophisticated, especially in the twentieth century: media control, the tools of advertising, and similar forms of information control have proven to be powerful forms of mind control. But history suggests that people need choice and autonomy, and to place their stamp on the work they do.

Chomsky suggests that an ideal form of social organization would be one or another form of what he calls "anarchosyndicalism" or "libertarian socialism." These are "isms" that one does not usually encounter, although they are suited to the idea that freedom and community can integrate. The anarchist/libertarian aspect would satisfy the need for freedom and creativity, and the syndicalist/socialist that for community (often found not just with family, but with those at work, in community projects, at play, and so on). Explanations of why Chomsky chooses this as an ideal form of organization (and insight into how this political ideal guides his criticism of current political "management" and suggestions concerning policy) are found in his political writings. I do not pursue the matter further here. My aim is to indicate that seeking justification for a moral/political ideal represents another kind of connection between a science of language and politics. Again, the empirical scientific study of mind (prominently, language) and human nature plays a central role.

Whether readers pursue the question of integration or not, I hope this volume will encourage all to look further into Chomsky's work and the work of those who have extended it – including those in this volume who, in discussing Chomsky, speak not just of his work, but of what they and others have been able to contribute to "Chomskyan thought." Their efforts illustrate how fruitful Chomsky's contributions have been to the intellectual study of language, of human mind and human nature, and of our conduct and goals as members of political communities.

The chapters

Linguistics

Chomsky's work in the science of language began in the late 1940s with an undergraduate thesis at the University of Pennsylvania, the basis of his MA thesis, *The Morphophonemics of Modern Hebrew*. After appointment as a Harvard Junior Fellow in the early 1950s, he began the monumental *The Logical Structure of Linguistic Theory*, a chapter of which was submitted as his

Ph.D. thesis at Pennsylvania. Completed in 1955 and revised for publication in 1956, it was not actually published until 1975, and then only in part. But, as Howard Lasnik mentions in his discussion of the computational "levels" built into Chomsky's various theories of the language organ, it set the stage for, and anticipated, much of Chomsky's work in the science of language, including aspects of his recent "minimalist" program.

Neil Smith nicely outlines the nature of Chomsky's project for a science of language. He also points to the connection between the science of language and biology. That connection becomes particularly evident in Chomsky's solution to what he calls "Plato's Problem" – the task of explaining how we can acquire so much knowledge of language (its structure, sounds, and meanings) in such a short time. David Lightfoot focuses on this. The solution Chomsky offers, Universal Grammar (UG), is a hypothesis about what children start with, the "initial position." Lightfoot looks primarily at what must be a biologically inbuilt, structural schema for language. Succeeding chapters discuss other aspects of UG. Elan Dresher focuses on Chomsky's work on linguistic sounds during the 1950s and 1960s, culminating in Chomsky's and Morris Halle's *Sound Pattern of English*. This work indicates that human linguistic sounds are systematic, "abstract," and, apparently, unique to language alone. Further developing a small but revealing segment of this theme, Laura Petitto discusses research that localizes tissue in a part of the brain homologous to that found in several primates, tissue that used to be thought of as devoted to sound recognition but that in the case of humans seems to be language-specific, innately "programmed" to recognize, respond to, and lead to production of linguistic syllabic structure – syllabic structure, remarkably, in *both* speech and sign. The last chapter of the linguistics section presents some of Lila Gleitman's and Cynthia Fisher's work on "word" (lexical) learning. They do not attempt to say where sounds and meanings (concepts) come from. Presumably, a full theory of UG speaks to that. Instead, they focus on the kinds of information children rely on in order to associate or map sounds and concepts in their mental dictionaries. That information is syntactic and language-specific, which presupposes that the child, who so obviously recognizes what is relevant (and when), has the conceptual tools and a schedule for their application built into the mind at birth. A theory of UG describes those tools and points in the direction of making sense of how they come to be applied.

Philosophy of mind

Like Descartes, Chomsky makes his philosophical work continuous with his scientific. The study of mind and language is an attempt to characterize and explore the consequences of a developing science of mind – one in which a science of language plays a prominent role. The consequences that can and should be explored include those that involve the realization that we – and our

language – are biological structures. This suggests a different way to understand ourselves and human communities and, thus, consequences for action – including political action. Seen in this way, philosophy well practiced aims to offer the best – most rationally defensible, all things considered – picture of our biological minds and natures while exploring the consequences if the picture that is drawn is correct.

Chomsky's work in this area began in the 1950s when he read historical works in linguistics and philosophy. His reading led him to develop and elaborate a framework for understanding the human mind and language that he called a "rationalist" approach, which he contrasted with a rival "empiricist" approach (Hornstein, this volume). The labels and the ways Chomsky characterized the rationalist and empiricist pictures of the mind are apt: they suit the philosophical views of the mind that traditional rationalists (Descartes, Leibniz, Cudworth, etc.)[1] and empiricists (Locke, Hume, etc.) held, and they characterize important differences between views of the mind and the science of mind found today. The contrasting approaches are explored in detail, although not under these labels, in *Cartesian Linguistics* in 1966 and they have been elaborated since. Rationalists hold that the mind is both structured and provided with rich and extremely useful "content" at birth. Rationalists are "nativists." The rationalist recognizes, of course, that experience and "external" factors play a role in the mind's "choosing" which concepts to activate or develop. But the rationalist denies that external elements shape and constitute concepts via the operations of some sort of domain-general learning procedure such as hypothesis formation and testing. Circumstances serve to "occasion" or "trigger" the introduction of a concept; crucially, the mind's own machinery dictates what "patterns" in the data count as appropriate "occasions." The patterns are, in a sense, built into the mind all along. Empiricists, in contrast, think of the human mind as getting its language-specific (and much else) structure and virtually all of its "content" by "learning" it from environmental conditions – interaction with things (world) and others ("speakers" who "train" their young, according to some). Chomsky's empiricists are anti-nativist. Further, his rationalists think that the most fruitful way to study the mind and its elements and "contents" is to focus on its internal structure and operations ("internalism"). For them, a study of language's various contributions to cognition, including the concepts that language expresses and the terms it puts in "referring positions" in sentences, is a study of internally constituted "tools" that people can use for various purposes. The ways people use these word-tools to say what they intend, or to refer to various things, are matters of free human action. Trying to deal with free action in a naturalistic science is for the rationalist hopeless. In contrast, the empiricist when dealing with concepts or reference looks outside to the mind/person in its/his/her interaction with the environment ("externalism"). They might construe a concept as a functional role in some overall account of humans using

language (Wittgenstein 1963; Sellars 1974). And they might think of reference as a conventional relationship between word and world, or perhaps even look for a "natural" relationship in a realist construal of information theory (Dretske 1981); in either case, they apparently ignore the fact that people use words (and they use them in many ways) to refer to many things.[2] In some much-admired work (Kripke 1972; Putnam 1975; Burge 1979), the idea that environment constitutes linguistically expressed concepts/meanings has taken the extraordinary form of holding that meanings are individuated by properties and things outside the head, perhaps completely unknown to speakers. I might be told that the word *platypus* means – at least in part – some specific set of features of the platypus genome; these are unknown to me and – I venture – to anyone else. Yet that genetic structure is part of what I express when I say "Doesn't Harriet have a pet platypus?"[3] Finally, Chomsky's rationalists attribute the remarkable flexibility and adaptability of humans and the creativity of the human mind to those internal, largely innate structures and contents of the mind that *enable* flexibility, adaptability, and creativity. His empiricists, committed by the nature of the empiricist program to trying to find system in the multiple ways in which language and other cognitive systems are used, have little to offer in explaining human creativity. They tend to gesture in the direction of similarity and analogy, and say that these extend already-learned structures and contents. Chomsky indicates the failures of this approach in many places (1966, 1975, 1986, 1988b, 2000a, *inter alia*).

Norbert Hornstein outlines Chomsky's rationalist/empiricist distinction in both its historical and contemporary forms. Paul Pietroski and Stephen Crain present – focusing on recent evidence – a discussion of the nativist/anti-nativist issue. They explain why Chomsky thinks there are "innate ideas." Akeel Bilgrami and Carol Rovane show why Chomsky thinks that the current philosophical – and dominantly empiricist – preoccupation with language–world relationships under the topic "reference" is misguided. They also outline some aspects of Chomsky's view that human understanding and knowledge – based on biologically native systems as he thinks it must be – is of its nature limited by the cognitive "equipment" with which biology has provided us. In the last chapter of this section, I outline some of the considerations that lead Chomsky and several other rationalists to the conclusion that much of our conceptual range is built into us at birth. Following Chomsky (1966, 2002a), this idea is then linked to human creativity. That in turn introduces an important theme of Chomsky's political views.

Politics

Where Chomsky's elementary school classmates might have turned their commonsense form of understanding to analyzing sport teams or to detailed analyses

of who was friends with whom, he focused on politics. His first political publication, a February 1939 reflection on the fall of Barcelona, Czechoslovakia, and Austria and the ominous rise of fascism, appeared soon after his tenth birthday in the school paper he edited. It helped spark an interest in the Spanish Revolution, a topic he could pursue in his trips to New York, where he frequented anarchist offices and the secondhand bookstores on 4th Avenue run by refugees from fascism (see Barsky 1997 for an account of Chomsky's early life). The research he did in his teens – plus, no doubt, a continued intense interest in the creative and developmental opportunities afforded individuals by a rich native endowment, including the possibility of anarchist forms of social organization – allowed him, many years later, to write a sophisticated review of a scholar's book on the topic. Chomsky has a prodigious memory and intense powers of concentration; few others could recall or consolidate enough of what they had read to use it many years later. What needs emphasis, though, is that his classmates had the same tools – the concepts of common sense – needed to understand people as individuals and in groups that Chomsky had.

The obvious lesson is that political systems and political events are within the reach of everyone: "experts" and "managers" are not needed for political analysis, criticism, or decisions. Political study and criticism is not science; the label "expert," warranted where specialized concepts are in play, does not apply. Granted, some people are more sophisticated in political analysis and criticism than others, and anyone can improve in discernment – experience tempered with skepticism does matter. But sophistication and improved discernment require no specialized knowledge and arcane concepts, just interest and – connected with that, surely – some expectation that one's interest can make a difference. Given this, why is there often more interest in sport and the latest Elvis Presley sighting than in political analysis and criticism, even in contemporary democracies, where – presumably – one can make a difference? Part of the answer lies in the fact that contemporary democracies are largely in the control of private power – in effect, corporations. Contemporary democracies respect James Madison's principle that those who own the country should run it. Individual voters choose from a list of candidates, often representing a narrow political range. While representatives nominally have considerable power and are elected to serve the interests of their constituents, their decisions in fact serve the interests of private economic power. The mechanism is straightforward: corporations won for themselves at the end of the nineteenth century many of the rights of persons (including free speech), and they use these "rights" and their massive economic power to influence elections (by contributions and advertisement) and to determine legislation (by lobbying and threat). In this way, the important economic decisions – those that are so crucial to people's

lives – are, in effect, made solely by boards of directors of corporations, institutions designed to maximize accumulation (profit) and domination (monopoly), not "serve the people."[4] Most of the electorate recognizes that the system accords them little control; that is why there is often little interest in the political process. These considerations are rarely mentioned and never emphasized in corporate-run mass media, which studiously overlook the obvious ways in which policy, both domestic and foreign, accords with the needs of corporate power. For example, one of the consequences of continued US hegemony in the Middle East is a considerable degree of control over the oil resources of that region. That hegemony has, in part, been maintained since the mid twentieth century by massive financial aid to Israel – particularly in the form of military equipment. Other "initiatives" included military support for Turkey, "friendship" with the Saudis (who invest heavily in US markets), aid to an Egypt willing to accommodate Israel and suppress popular local movements, and support for Saddam in Iraq during the 1980s – including support for chemical warfare against Iran and a blind eye to Saddam's efforts to slaughter Kurds. When Saddam became less useful and made the mistake of challenging US control, it led to Bush the first's invasion, followed a decade later by Bush the second's. The most prominent beneficiaries of these efforts have been not the citizens of Iraq or the US (who inevitably must pick up the tab), but corporations (e.g. Halliburton) and markets, which, assuming US hegemony, are assured of continued control and low energy costs. The pattern is the same in other cases – even Vietnam, which has joined the capitalist market fold. No US administration publicly admits the imperialist intentions of the project of "bringing freedom" (i.e. freedom for markets and corporations) (Chomsky 2003), and corporate-owned media seldom mention this or other unwelcome facts about the nature of the project (Chomsky 1989). Instead, both craft and foster what Chomsky calls the "necessary illusions" that portray the 2003 invasion of Iraq, for example, as motivated by an effort to bring democracy to the Iraqis, fight terrorism, corral the Butcher of Baghdad, etc. Chomsky deals with this phenomenon – and its motivations – under the topic "the manufacture of consent." Jean Bricmont explores this topic in the last chapter of the volume; the other authors in the political section also touch on it. Chomsky's work in this area – often in cooperation with Edward Herman – has to be counted as one of the most important – and increasingly influential – studies of political behavior in recent times.

Milan Rai provides an overview of Chomsky on politics by placing political views in an Enlightenment conception of morality. Chomsky has spoken to so many political topics and issues that it is impossible to offer a complete picture; but one can – and Rai does – bring many issues together by detailing Chomsky's moral motivations: why in all his political efforts he emphasizes freedom and reason. The three other contributors focus on central themes in Chomsky's

political works. Jean Bricmont has been mentioned. James Wilson discusses Chomsky's views of the individual, the state, and corporation, and relations between them; this helps make sense of Chomsky's views of the United States' (and other corporate-run states') internal affairs. Irene Gendzier focuses on Chomsky's attempts to elucidate the motivations of US foreign policy: she concentrates on the North/South divide and US imperialism.

Part I

Chomsky on the human language

1 Chomsky's science of language

Neil Smith

Language makes us human.

Whatever we do, language is central to our lives, and the use of language underpins the study of every other discipline. Understanding language gives us insight into ourselves and a tool for the investigation of the rest of the universe. Martians and dolphins, bonobos and bees, may be just as intelligent, cute, adept at social organization, and morally worthwhile, but they don't share our language, they don't speak "human." One of Chomsky's achievements is to have demonstrated that, despite the easily observable richness of the world's languages, there is really only one human language: that the complex and bewildering array of different languages surrounding us are all variations on a single theme, most of whose properties are innately given.

The scientific study of language

Linguistics is conventionally defined as the "scientific study of language" – "language" in the singular. Although its domain is usually taken to include not just the wealth of the world's languages – Amharic, Berber, Chinese, Dutch, English, etc. – but also all possible languages, past, present, and future, for Chomsky the focus of linguistics is the study of knowledge of language, of "human." This chapter will attempt to justify and explain this emphasis, spell out its implications, and motivate the description of his linguistics as "scientific."

There are several strands to the claim that linguistics is a science. The first is that linguistics provides a general theory explaining *why* languages are the way they are: each language is a particular example of a universal faculty of mind, whose basic properties are innate. The second is that the theory should spawn testable hypotheses about those properties: like a physicist or a biologist, the linguist manipulates the environment experimentally to see what happens and, crucially, he or she may be wrong. The third is that the investigation of language should proceed no differently from the investigation of physical and chemical entities: there is no justification for placing requirements on linguistic theories beyond those placed on physical theories. In both domains, the theories are

underdetermined by the data, but their respective hypotheses are comparable in that they aim to discover the truth about aspects of the natural world.[1]

It is important to note that characterizing some enterprise as "science" is not a value judgment. Dostoevsky's insights into the human condition are as deep as those of Darwin, but they have a radically different status. As Chomsky puts it: "We will always learn more about human life and human personality from novels than from scientific psychology."[2] Literature and science are complementary rather than in competition, and domains which lend themselves to scientific investigation are few. Vision and knowledge of language are such areas, consciousness and free will are (probably) not. The former constitute "problems" about which we can devise explanatory theories in much the same way as we devise theories of particles or genes in the natural sciences; the latter are "mysteries," whose understanding in any depth may well lie beyond our intellectual powers (1975: ch. 4). It is plausible to assume that spiders are incapable of understanding the geometry of the elegant webs they construct. It is equally plausible that we have comparable limits to our understanding, and that understanding free will lies beyond those limits. Those domains about which we can construct theories of the kind characteristic of the natural sciences are said to fall within the scope of "naturalistic inquiry." Knowledge of language is such a domain.

Modularity

Language may be what makes us human, but humans are remarkably complex, and the human mind/brain[3] is notoriously the most complex entity known. Fortunately this complexity can be broken down into more manageable chunks, where each chunk constitutes an appropriate domain of investigation and theory construction. While they can be related, physics and chemistry, botany and zoology are distinct domains; and within any one of them there are finer subdivisions, so that respiration and reproduction, or the circulatory system and the olfactory system are treated separately. This attempt to divide and conquer is seen most clearly in "modular" analyses of the mind. The human mind is argued to be modular in that vision and audition, face recognition, and the number sense are all separable faculties governed by their own generalizations and principles. Chomsky's work over several decades has provided a wealth of evidence that the language faculty constitutes a separate module in this sense, akin in many respects to any other organ of the body (Chomsky 1975, 1984). Moreover, he has provided more, and more rigorous, evidence about the precise internal structure of this module than has been provided for any other domain, except perhaps vision. That is, there are two different notions of modularity: one according to which the language faculty is a module of the mind, distinct from moral judgment, music, and mathematics; another according to which the

language module itself divides up into submodules, relating to sound, structure, and meaning. Evidence for both kinds of modularity comes from the independence one from the other of the various modules, as seen most clearly in double dissociation.

Double dissociation

One can be blind without being deaf, deaf without being blind, and so on for all the faculties with which we are endowed. Because our ears and eyes are separate organs, the dissociation of deafness and blindness is unsurprising, even though the cause of deafness or blindness may in some cases be due to damage to a different organ, the brain. That is, we expect the failure of a particular component to lead to a particular deficit, even if, in the case of the brain, the complexity is so great that we may see a variety of different symptoms arising from the failure of a single part. Moreover, the workings of these various components are independent of intelligence, of the working of the "central system" in Fodor's (1983) term. In the case of sight this is well understood: no one any longer expects the misfortune of blindness to correlate with IQ, but the same appears to be true of language.

A striking example of such dissociation is provided by the case of Christopher (Smith & Tsimpli 1995), a man who lives in sheltered accommodation because he cannot look after himself, who cannot solve problems of the intellectual complexity of noughts and crosses (tic-tac-toe), but who can nonetheless read, write, speak, and understand some twenty or so languages. An example of submodular dissociation within the language faculty can be seen in the fascinating case of MC (Froud 2000), who can read nouns and verbs of arbitrary complexity, but who cannot cope with "function" words like *after, not, the,* or *because,* at all.

Such cases show us that our knowledge of language is both more complex and more isolable than might appear at first sight. It is time to look in some detail at precisely what this knowledge consists of, as this is the area in which Chomsky has made the greatest technical advances, and also the area which underpins the philosophical and psychological claims that have made him famous (or infamous) in the rest of academe.

Knowledge of language

Our knowledge of English (or any other language) enables us to produce and understand any of an indefinitely large number of sentences and, additionally, we can make judgments of well-formedness about sentences we have never previously encountered. Consider an example of the order of words possible in simple sentences of English containing an adverb like *occasionally*. All the