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Decoding Chomsky

DANIEL L. EVERETT*
Bentley University

Chris Knight, *Decoding Chomsky: science and revolutionary politics*. New Haven, CT: Yale University Press, 2016.

An anthropologist contemplates Chomsky

Chris Knight, an anthropologist at University College London, has produced a well-written, thought-provoking, and controversial examination of the interaction of politics and science in the work of Avram Noam Chomsky, the most dominant figure in linguistics, cognitive science, and philosophy from the latter half of the twentieth century. In linguistics Chomsky's influence is unique. Perhaps only Charles Darwin in biology has been equally influential in a single field of study. This means that, like Darwin, linguistics for a long period at least, has been constrained by Chomsky's work and ideas. For many years research could be classified as either advancing it or criticizing it (though for a growing number of linguists, psychologists, and others these days, I suspect that Chomsky's work has simply become irrelevant). Some believe that Chomsky's influence has been detrimental. Others believe it has transformed linguistics from a pre-scientific exercise in taxonomy into a genuine science, on solid intellectual footing for the first time in its long history.

Knight's purpose is to explain, describe, and criticize Chomsky's nativist, non-sociological theory of the nature, origins, and use of human language, and to draw special attention to what he takes to be an enormous disconnect between Chomsky's politics, in which social engagement is crucial, and his science, in which it is to be avoided at all costs. Knight agrees with Chomsky's politics, but disagrees with his linguistics. This is in part because the former concerns itself with the socio-cultural existence of Homo sapiens, whereas the latter ignores it.

This is a courageous project for at least two reasons. First, the history of the field of linguistics is something every linguist has a slightly different take on, so anything spoken against received narratives is going to provoke a chorus of disagreements. Second, any criticism of Chomsky's work is almost always greeted by the refrain that "This person doesn't understand Chomsky". And indeed, *Decoding Chomsky* has faced vociferous criticisms of both types.

[*] Address for correspondence: deverett@bentley.edu

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As an anthropologist, Knight enjoys a vantage point that many historians of science lack, an understanding of the role of culture and society in shaping individual and group thought, not only in science but in life more generally. At the same time, not being a linguist brings at least one disadvantage: Knight fails to provide convincing examples to the effect that formal linguistics cannot account for its own primary empirical focus, GRAMMAR, without a theory in which socio-cultural constraints are causally implicated.[1] After all, Chomsky must be evaluated based on the goals he himself sets for his theory, not on what others think his goals should be. Therefore, *Decoding Chomsky* would have been more effective had it included more discussion of the empirical shortcomings of Chomsky's views that devolve from the failure to engage culture and society. Merely juxtapositioning Chomsky's different approaches to the separate issues of US foreign policy and the nature of grammar does not demonstrate that Chomsky is mistaken to include social considerations in the former and ignore them in the latter. This is the principal flaw in an otherwise wonderful book. But, by any standards, the book affords an interesting, rich, and well-argued perspective on Chomsky's development and subsequent intellectual influence.

Decoding Chomsky is organized into twenty-three chapters, beginning with Chomsky's early days learning and writing about politics and language up to his current thoughts about the origin of language. The first chapter of the book, 'The revolutionary', explores the idea that Chomsky's work is a sterling example of "disruptive innovation" in the 1950s. This chapter is important for a number of reasons. But its principal significance is that it clarifies some of the myths surrounding Chomsky's ascent, a common one being that he sprung Minerva-like from the forehead of science, a fully formed intellect, presenting a new perspective to the world that had not been available before he appeared. In fact, the truth is more mundane. Chomsky was a brilliant reflection of the zeitgeist – the beginning of a computational and cognitive subculture – in which he was raised and worked. His math came from others, as Knight points out (and is otherwise well known). Some of his leading linguistics ideas came from others (X-bar theory and Transformations came – in slightly different form – from his thesis advisor, Zellig Harris). Whenever we idealize "geniuses", we forget the social nature of knowledge and progress. As I say elsewhere (Everett, 2017b):

> But what is an invention? It is a creation of culture. Edison did not invent the light bulb. He needed Franklin's work in electricity nearly two-hundred years before him. No one person invents anything. Everyone is part of a

[1] Readers of this journal, however, will be familiar with such examples.

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> culture and each other's creativity, ideas, earlier attempts, and the general world of knowledge in which they live. Every invention is built up over time, bit by bit. (Everett, 2017b, p. xviii)

The present paper does not review each chapter of Knight's book. But it does review both Knight's account of Chomsky's early history, as well as what Knight sees as the apparent contradiction between Chomsky's political stance and his employment by one of the institutions most responsible for the technology of war in world history, the Massachusetts Institute of Technology. From the outset, it is worth mentioning that Knight's narrative matches a first-hand account relayed to me by someone who was there.

The late Hu Matthews, a former professor of linguistics at MIT cum missionary linguist, recounted to me, about thirty years ago, his version of how Chomsky came to MIT in the late 1950s. As he told it, Victor Yngve had taken over the direction of the research on Machine Translation from Yeshua Bar-Hillel.[2]

In Matthews' narrative, Yngve was already working with Morris Halle when he began searching for additional linguistic talent for the project. Zellig Harris strongly recommended Noam Chomsky and Hu Matthews. Hu told me that it was obvious from the first that Chomsky was of high intelligence, even for the MIT crowd. He worked on the project, focusing on his theory of syntax, but, according to Hu's recounting, would say to others that machine translation was not going to work. Another person working there was Robert Lees. He started using less discretion in repeating Chomsky's assessment of the possibilities of machine translation to others and, according to Matthews, was consequently terminated by Yngve.[3] But he was then taken on as a PhD student by Chomsky once the linguistics program began, shortly thereafter, in 1961.[4] From this point, Halle and Chomsky together founded the most important linguistics department ever established, judged by influence in linguistics hirings around the world and citation indices.

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[2] According to Hutchins' (2012) obituary of Yngve: "After Bar-Hillel's departure from MIT, he was appointed in July 1953 by Jerome Wiesner at the Research Laboratory for Electronics (RLE) to lead the MT research effort there (for a retrospective survey of his MT research activities see Yngve, 2000), online: <http://cognet.mit.edu/pdfviewer/journal/coli_a_00115>.

[3] Lees was known for his strong opinions and defense of Chomskyan methodology. When he learned of a grant to Nelson Francis for the creation of the Brown Corpus, he remarked: "That is a complete waste of your time and the government's money. You are a native speaker of English; in ten minutes you can produce more illustrations of any point in English grammar than you will find in many millions of words of random text." (Biber & Finegan, 1991.

[4] Interestingly, in the 1990s, Yngve phoned me out of the blue, when I was Chair of the Linguistics Department at the University of Pittsburgh, to repeat much of this history and to complain about Chomsky's subsequent fame.

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Chomsky's methodology has always been based on the idea that native speakers' intuition is the best source of data on their grammars. Such intuitions, ex hypothesis, provide better data, for example, than is possible for a non-native-speaker field researcher from another culture. Clearly native speakers enjoy advantages. But when any methodology relies on intuition, in particular when Generative Grammar ignores standard social science research methods, as it has by and large, it runs the risk of becoming less closely driven by the facts.[5] For example, although Chomsky has given lip service to field research in his career, he has preferred to rely on the highly problematic, non-quantitative methodology of looking at his own intuitions – a feature of the humanities rather than the sciences – as opposed to the application of quantitative methodologies common in science (for example, one can work in Chomsky's theory just fine with no math background at all).[6] This hasn't prevented him from endorsing field research as important, however:

> It is only through intensive studies of particular languages that one can hope to find crucial evidence for the study of Universal Grammar. One study such as that of Matthews on Hidatsa is worth one thousand superficial studies of varied languages from this point of view. (Chomsky, 1972, p. 167)

And yet the field has long favored "superficial" non-grammar-length studies. Actual grammars produced by theoretical linguists are relatively rare compared to those produced by linguists from other subfields of linguistics, such as typology, descriptive linguistics, and documentary linguistics. Grammars still lack the cachet of papers in high-impact journals, such as *Linguistic Inquiry* – the gold standard among generativists. It is more common to find grammars emerging from the work of a resurgent group of descriptive linguists interested in documenting endangered languages. Yet such efforts still lack (at least in their citation indices) the prestige among theoretical linguists that Chomsky attributes to Matthews' grammar. That is not Chomsky's fault, but the quote above is ironic when we consider that Chomsky himself has never attempted a grammar or any "intensive study" of any particular language.

The peculiar absence of the cultural in Chomsky's theory is highlighted by Knight on page 124 (and elsewhere), where he discusses Chomsky's rejection of socio-cultural sources of concepts. Chomsky (1995) says, "The very notion of 'lexical entry' presupposes some sort of fixed, universal vocabulary in terms

[5] C. S. Peirce wrote a good deal on the philosophical shortcomings of intuition as a source of knowledge. Unfortunately, his criticisms of Cartesianism never had the influence on modern linguistics they should have had.

[6] Ted Gibson and Evelina Fedorenko (2010) have demonstrated clearly the problems with this methodology.

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of which these objects are characterized, just as the notion of 'phonetic representation' presupposes some sort of universal phonetic theory." Knight goes on to discuss how Chomsky believes that all humans, therefore, have innate concepts – such as 'carburetor'. In Chomsky's view:

> Furthermore, there is good reason to suppose that the argument is at least in substantial measure correct even for such words as *carburetor* and *bureaucrat* [Chomsky's emphasis, DLE], which, in fact, pose the familiar problem of poverty of stimulus if we attend carefully to the enormous gap between what we know and the evidence on the basis of which we know it … However surprising the conclusion may be that nature has provided us with an innate stock of concepts, and that the child's task is to discover their labels, the empirical facts appear to leave open few other possibilities. (Knight, p. 164)

Knight rightly finds Chomsky's proposal here a bit strained. To me it is more than that. [7] It ignores nearly all of the work of philosophers and anthropologists over the past century on the acquisition of concepts. For example, C.S. Peirce had a great deal to say about concepts and how we come by them, still some of the best work ever done on the subject.[8] Robert Brandom (Brandom, 1998) has also written extensively on the nature and origin of concepts, but Chomsky ignores such work entirely. Rather, Chomsky bases his speculation here on an over-inflated concept of "poverty of stimulus" (what Dan Slobin (1988) has called "poverty of imagination").

Chomsky's work is in several senses similar to that of Sigmund Freud. It has been influential, inspiring to some, original to many, but overall it has arguably failed to sustain itself empirically, because it has failed to engage the interactions of human psychology and language, as each emerge from local societies and cultures, as Knight is careful to point out in detail.[9] Moreover, Chomsky, like Freud, proposed many fascinating ideas about the unconscious workings of the mind, most of which have turned out to be wrong (deep structure, clarity of poverty of stimulus arguments, surface structure, X-bar theory, rules, transformations, movement as more than a metaphor, syntactic chains, government, and so on). Knight doesn't really address the many changes in the theory so much as Chomsky's avoidance of the social in his linguistic theory.

Chris Knight's book has been derided by Chomsky (as Knight mentions in the 'Introduction') as nearly completely in error. To the contrary, after forty years in this business, my conclusion is that Knight is overall unerringly

[7] See, for example, Pullum & Scholz (2002) and Blumberg (2006).
[8] For example, Peirce (1878) discusses the sources of concepts in great detail.
[9] For a detailed discussion of this topic, see Everett (2016).

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accurate in his portrayal of Chomsky and his intellectual legacy. The view that emerges from *Decoding Chomsky* is one that surprises few of us who have scratched our heads for decades about Chomsky's appeal – Chomsky's theories emerge in large part from non-quantitatively based intuition, combined with strong personal opinions about how the world works, driven by a largely deductive theory.[10]

Nevertheless, Chomsky's work has brought him great acclaim. So much so that throughout his adult life Chomsky has enjoyed privilege and wealth. His brilliance, luck of the draw, the appeal of his politics, and a ferocious work ethic, especially in rebutting critics, have all contributed to his influence, wealth, and success. Evidence of his intellectual influence is easy enough to find. For example, his numbers on Google Scholar are astounding (see Figure 1).

The i10 index of 860 means that 860 of Chomsky's works have been cited at least ten times. Chomsky's h-index means that he has had more than one hundred publications cited heavily. And then there is just the raw fact of over 300,000 citations period. If Google Scholar were taken as an absolute measure of scientific importance then the *New York Times* would be correct in its description of Chomsky as "arguably the most important intellectual alive" (Robinson, 1979).

But of course Google Scholar is also a SOCIAL measure in part. It can measure popularity as much as scientific accomplishment. And our cultural assumption is that popularity among scientists means importance. Clearly it can indicate important research. But not always. What I have elsewhere (Everett, 2016) called "Ivy League Bias" means that it is simply easier, for scientists, reporters, and teachers, to take the words of a culturally prestigious members of society than to work out things independently. Chomsky's amazing citation numbers do show that there are many, many researchers for whom his research is a touchstone, and there is no disputing that this means he is hugely influential among a wide variety of scientists, especially linguists.

Among those under his influence, many have great devotion to him and to his research program or activism, such as they interpret that. As Knight points out, moreover, for many of his political fellow travelers and admirers, it is desirable to think of Chomsky as a genius of the level of Newton or Einstein. If he indeed occupies the Newtonian heights of importance and brilliance then his political judgments necessarily must carry more weight, so some believe. This sounds plausible initially. But there are a couple of problems with this idea. First, it breeds ad-hominem arguments in politics and linguistics, as people appeal to the person of Chomsky rather than the ideas in debate. Second, Chomsky is no Newton nor Einstein. This is not to

[10] Nevertheless, it is difficult not to admire Chomsky. I don't think I would have become a professional linguist were it not for him (and the myths that surround him), as well as the personal intellectual energy he exudes.

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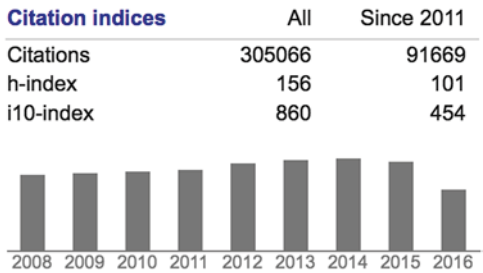


Fig. 1. Chomsky's citation indices on Google Scholar.

say that he is not as intelligent as they were. I have no idea. But the former established mathematically based fields of study that were universally recognized as accurate in their contexts.[11] Chomsky's principal proposals over the years, those for which he became famous originally, such as 'deep structure', 'surface structure', 'meaning-preservation', the 'structure preservation principle', and many other aspects of Chomsky's theory of syntax, have been abandoned. His most recent work on the centrality of the operation 'Merge' faces severe (and well-known) empirical problems from languages that appear to have linear, non-recursive grammars or ternary branching syntax, or exocentric structures.[12] Such problems are linked directly to cultural constraints on syntactic operations in some analyses (Everett, 2012). Moreover, Chomskyan theory does not now, nor has it ever, taken 'language' – a necessarily socio-cultural construct – as its object. Chomsky (1995) claims these days that he studies 'I-language', which is "Language is taken to be the object of study in linguistic theory; it is the mentally represented linguistic knowledge that a native speaker of a language has, and is therefore a mental object". In other words, the grammar in someone's head.

But there are a couple of sleights of hands in this definition. The first is that it does not tell us what the linguistic knowledge is. There are many types of linguistic knowledge. But when Chomsky talks about it, here is roughly what he means: knowledge of recursive syntax that cannot be explained by logic, history, culture, society, physics, or any experience of the speaker outside of the mastery of their native language before puberty. In other words an I-language is knowledge that is unique to grammar. The problem is, outside of Chomsky's theory, many linguists doubt the extent of such knowledge.

[11] Chomsky often disputes this, in his regular mention of the questionable notion of 'Galilean Science' (see Behme, 2014).

[12] Jackendoff & Wittenberg (2017); Everett (2017a, 2017b); Futrell, Stearns, Everett, Piantadosi & Gibson (2016).

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Cognitive Linguistics, for example, would be unlikely to acknowledge little if any grammatical knowledge that meets that definition. Moreover, a priori, under these constraints, we cannot tell what empirical facts such a theory should study. The theory itself offers little guidance as to which syntactic constraints could be due to extrinsic factors.

A common example Chomsky gives concerns the structures proposed by many linguists as models for what the speaker knows. For example, consider the hierarchical structure of constituents. This type of 'chunking' of units has been well known even long before the pioneering work of Herbert Simon's (1962) 'Architecture of complexity' and George Miller's (1956) 'The magical number seven, plus or minus two', and is not limited to grammar. Recursive structures are common apart from language, as Simon pointed out.[13] Therefore, Chomsky was far from the first to notice 'chunking' in human languages or constituent structures. Nor did he, unlike others, note how pervasive recursion is in nature, especially in information transfer.

Language evolution is of interest to linguists, anthropologists, psychologists, and the general public. Here Knight is right on when he focuses (p. 167) on puzzling statements by Chomsky and Robert Berwick, in their (2016) book, *Why Only Us? Language and evolution*. Throughout their book, they make statements like the following: "In some completely unknown way, our ancestors developed human concepts. At some time in the recent past … a small group of hominids in East Africa underwent a minor biological change that provided the operation Merge – an operation that takes human concepts as computational atoms and yields structured expressions … [that] provide a rich language of thought." For Berwick and Chomsky language did not arise from anything social. Rather, because they believe that grammar is not only central to language, but in effect grammar IS language, and that language is not for communication, this statement makes sense to them.

Knight is not amused. He says that such vague statements should not be confused with science. And Knight is indisputably correct here. [14] Knight is also right to point out that *Why Only Us?* is deeply flawed because it lacks any engagement with the social origins of language, much of which is NOT "completely unknown".

In fact, the 'argument' by Berwick and Chomsky seems to be based largely on Chomsky's reputation rather than any solid evidence, the 'ad-hominem danger' that I mentioned earlier. They offer the thinnest of speculations,

[13] Recursion is very useful, as I have pointed out in many places, for information transfer, and so in that sense is not grammar-specific. Binary-branching, likewise, to the degree that it exists in natural languages follows from the notion of adjacency, that things which affect one another prefer to be adjacent to one another. See especially Everett (2012).

[14] See Everett (2012, 217b).

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ignoring huge amounts of work in anthropology, linguistics, and sociology, appearing to be utterly unaware of huge amounts of recent work in archaeology and Peircean semiotics that bears directly on the origins of human language, appealing instead implicitly to Chomsky's non-existent authority in this area. Knight is absolutely correct to knock a hole in their conjectures on the non-Darwinian appearance of language for, along with other things, ignoring the social aspects of language and, from my own perspective, inflating the importance of grammar in language. (There are languages today, such as Pirahã and Riau, that seem to use linear grammars, avoid embedding, yet people communicate and think in them just fine.) Moreover, though Knight doesn't mention this, the crucial component of human languages is not grammar but the SYMBOL, in the sense of Peirce's semiotics. Development of the symbol was the birth of language, not grammar (see Everett, 2017a, 2017b).

On various pages Knight takes Chomsky to task for his Cartesianism. Interestingly, C. S. Peirce, the founder of Semiotics (and Pragmatism) invested a good deal of space in his writings to criticisms of Cartesian ideas – Dualism, the Cartesian concept of intuition (to Peirce, Descartes' notion of intuition was but another example of some philosophers' confused thinking), and Cartesian epistemology, among others. Cartesianism and Rationalism, by avoiding the social, the cultural, the background knowledge that Peirce and Hume occasionally labeled 'instinct', have done linguistics no favors. Among the consequences, again, is the failure of some Chomskyans to regularly apply standard social science methodology, to an aversion to evidence that supports the communicative basis of language, towards a shaky empirical foundation based on the Cartesian notion of intuition, and so on (see, e.g., Peirce, 1878).

Knight, in chapter five especially, explains how Chomsky's views were and are shaped by a seriously questionable metaphor, namely, that the mind is a computer, a metaphor that was beginning to appear during Chomsky's appointment as a Junior Fellow at Harvard University, one of the most prestigious positions in the academic world at the time. This metaphor was and is harmful to the development of linguistics as a discipline because it leads to the idea that language is primarily a type of software that underwrites only a narrow set of operations to constrain language emergence (the rules, constraints, and so on of phonology, syntax, and morphology). Knight cites Hilary Putnam (1960), Chomsky's old high school and undergraduate classmate, then world-class philosopher, in this regard (p. 46):

> It is important to recognize that machine performances may be wholly *analogous* to language, so much so that the whole of linguistic theory can be applied to them. If the reader wishes to check this, he may go through a

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work like Chomsky's *Syntactic Structures* carefully, and note that at no place is the assumption employed that the corpus of utterances studied by the linguist was produced by a conscious organism.

One vital question raised in several studies of the history of North American linguistics, one that Knight addresses, is how and why Chomsky came to dominate the field of linguistics so unquestionably for so long. Of course there have always been dissenters and pockets of linguists outside of Chomsky's gravity, but he not only immediately attracted many while in his twenties, even today, at eighty-nine years of age, he dominates the field as no other ever has. To my mind, there are at least three reasons for Chomsky's rise, each mentioned by Knight.

Knight traces the precipitous rise of Chomsky in the early chapter, referring back to the roots of his ideas throughout the book. Chomsky's early personal history is well known. As a young man from Philadelphia, he completed his bachelor's degree, master's, and PhD, all in linguistics, under a single influential figure, Zellig Harris at the University of Pennsylvania. Harris attracted Chomsky because he was a family friend and defended a political perspective close to Chomsky's own.

During this period of time, the late 1940s and early 1950s, mathematical modeling of communication was on the rise, especially in the work of Claude Shannon at Bell Labs, who later joined the same laboratory as Chomsky, MIT's Research Laboratory of Electronics, under the direction of Jerome Wiesner. Upon completion of his master's thesis, Chomsky received the above-mentioned multi-year position as a Junior Fellow at Harvard, in order to pursue his PhD work.

Once his work got underway at Harvard, Chomsky absorbed what was around him and wove it all into his own ideas. The first reason for Chomsky's rise – as we have seen – was the zeitgeist. Chomsky tapped into the desire to connect the study of language to computers, formal communication theory, and the hard sciences, at the same time that he shaped a new identity for the field that succeeded in getting many folks from other fields interested in linguistics to a degree not seen before in linguistic history. In his *The Logical Structure of Linguistic Theory* (Chomsky, 1975 [1955]) he outlined a formal model of linguistics that derived forms from a deductive model.

Thus, this common base hypothesis eventually took two separate paths. In the Universal Base Hypothesis of Generative Semantics, all languages shared a common semantic substrate, an underlying meaning structure. But in Chomsky's own work the universal base was Universal Grammar. I have questioned a lot of non-linguists over the years and my anecdotal evidence is that the average person finds it quite likely that culture, however they define it, affects the way we talk and the grammars that we employ. But if Chomsky

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is right, this cannot be the case, because the core of language is a computational system based on extremely simple principles (at least they have been claimed to have become more simple over the years) that allows – requires – formal operations orthogonal to social organization or cultural values. Chomsky also produced, however much he might have borrowed from professional mathematicians, the idea of the 'Chomsky hierarchy of grammars' that became important for computer scientists, philosophers, and psychologists. Chomsky made utterly brilliant contributions on numerous fronts, across several disciplines. This is the first reason that he rose to dominance so quickly. He was a comet across the sky.

The second reason for Chomsky's quick rise to power was that the US government was spending heavily on linguistics – from machine translation efforts to the study of foreign languages through the Department of Defense, the Army, the Navy, and the Air Force. One program, the National Defense Foreign Language Fellowships, though not related directly to Chomsky, was very helpful to the field of linguistics, by funding PhD dissertations on foreign languages. At one time just about any foreign language fit the specifications of the program.[15] Many field researchers at the time received significant financial assistance through this program. Knight, as have many other works, shows how the growth of Chomsky's theory was funded directly by the US military.

The third reason for Chomsky's rise was the state of linguistics as a field when Chomsky's work began. Linguistic work until this point was largely inductive. But Chomsky proposed a theory that was deductive and that in principle required no field research. This work could be done just fine from one's office. Chomsky's theory, moreover, PREDICTED things, things that had not been imagined before him, such as the differential complexity in the derivation of structures (e.g., the passive being derivationally more complex than the active since the passive was proposed to be the active subject to the 'passive transformation'). Thus, psychologists became keen to test the idea that more derivationally complex sentences were harder to process, among other ideas of Chomsky's. He claimed that meanings were determined exclusively by Deep Structures (deriving from his even earlier idea of 'kernel sentences'), and that transformations produced different surface structures, which were stylistic or discourse variants (which was the basic idea of Zellig Harris; in Harris's system, the active and the passive were paraphrases, linked as a transformation pair, though Harris did not claim that one was derived from the other). This was exciting, in spite of the fact that Deep Structure was

[15] Many early missionary-linguists, for example, were supported in their dissertation research by the NDFLF program, now known as FLAS (Foreign Language and Area Studies Fellowships).

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misunderstood almost from the outset as the universal semantic basis shared by all languages (which is indeed what Generative Semantics took it to be; Lakoff, 1971). But this misunderstanding helped Chomsky solidify his position because it was an extremely attractive idea for many – the idea that in spite of superficial dissimilarities between all languages, in the core meaning of sentences, all languages shared a common base.

As discussed also in Frederick Newmeyer's well-known history of Generative Grammar (a topic I also engage in Everett, 1990 [1983]), the state of linguistics at the time of Chomsky's early work was concerned primarily with the twin issues of methodology and description. The field arguably lacked the kind of theory, purpose, and rigor in argumentation that Chomsky introduced to it.[16] Chomsky's attacks on description for its own sake, i.e., in the absence of an overarching theory, as well as his rejection of the methodological goals that previous linguistics so favored, excited many young students of language as holding the promise of making linguistics a theoretical science. There were, to be sure, American linguists like Bloomfield, Pike, Hockett, Bloch, Trager, and – above all – Sapir, who preceded Chomsky, but no one had the bold theoretical vision of Chomsky that could bring linguistics into line with the computational and cognitive winds that were beginning to blow. The methodology focused on describing and classifying (more charitably, on the getting the facts down and understood as a prolegomena to theorizing). Chomsky brought a sense of purpose to many linguistic graduate students for the first time, transforming the perception of the activities of linguists into the enterprise of understanding, it was argued, the innate linguistic component of the mind/brain.

Yet, early on in the history of Chomskyan theory, some philosophers raised doubts, as in the following quote from Searle (1972):

> The syntactical structures of human languages are the products of innate features of the human mind, and they have no significant connection with communication, though, of course, people do use them for, among other purposes, communication. The essential thing about languages, their defining trait, is their structure. The so-called 'bee language,' for example, is not a language at all because it doesn't have the right structure, and the fact that bees apparently use it to communicate is irrelevant. If human beings evolved to the point where they used syntactical forms to communicate that are quite unlike the forms we have now and would be beyond our present comprehension, then human beings would no longer have language, but something else.

[16] Everett (1990 [1983]); Newmeyer (1980).

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Searle concludes that "It is important to emphasize how peculiar and eccentric Chomsky's overall approach to language is."

Knight further traces the roots of the ideas that led to Transformational Generative Grammar. Commenting on the obvious inspiration of the Russian–American linguist Roman Jakobson, Knight suggests that a direct influence on Jakobson, and thus indirectly Chomsky, was the Russian futurist–poet–philosopher–linguist Velimir Khlebnikov. Khlebnikov in fact did espouse some ideas that appear to prefigure Chomskyan theory. For example, he advocated a 'universal language' of elemental sounds inseparable from atoms of meaning, in particular noting the likely importance and universality of 'sound symbolism'. This is an interesting story, but I doubt that the ideas of Khlebnikov are likely to have had even an indirect influence on Chomsky via Jakobson. Chomsky has never been interested in the kinds of topics, such as sound symbolism, that so animated Khlebnikov. One cannot rule it out, however. The story earns its place in Knight's book because it traces influences on Jakobson's thought and there is no question that Jakobson was a crucial figure in the development of Generative Grammar, especially Generative Phonology.

Another reason for Chomsky's rise, according to Knight and David Golumbia, is his status as brilliant opponent to Marxist dogma integrating the social and science. Knight begins with this quote from Golumbia (2009, pp. 31–32):

> Scholars have offered any number of plausible explanations for Chomsky's rise to prominence, not least his own personal brilliance, and the incisiveness of his linguistic theories. Yet it seems reasonable to set aside some of these explanations and to think carefully about just what the times were and just what was the content of Chomsky's writing that made it seem not merely compelling but revolutionary. In what sense was the world ready and waiting for this particular Chomsky to emerge.

According to Knight (p. 196), Chomsky's "revolution in linguistics – crown jewels of the cognitive revolution – satisfied a deep social need". This need was the splitting of the social from the intellectual, breaking science from the pragmatics of social revolution. Chomsky produced a 'safe' revolution that had no worrisome social consequences, allowing scholars to have their cake and eat it too – drawing great salaries in great jobs without fear of major disruption. Chomsky of course did participate in many protests and was even arrested on occasion. But these were not protests against Capitalism but against specific US foreign policies, not the economic basis of the country.

Chomsky even spoke against the potential utility of a society of scientists in one of his more slanderous, condescending passages (Chomsky, 2008, p. 23): "If scientists and scholars were to become 'collectively self-organized and consciously activist' today, they would probably devote themselves to service to state and private power."

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My own work for the past thirteen or so years has been focused on how the cultural is causally implicated in the psychological. This was also Sapir's work and a common concern of many US anthropological linguists prior to Chomsky's rise. Therefore, Knight's perception that Chomsky's theory is bizarre and deeply misguided in ignoring the social and political in understanding human language is a judgment I share.

Having said that, once again, I believe that the case could have been much stronger had Knight taken actual Chomskyan analyses and shown how they could have been improved or how they failed at their own objectives by failing to recognize that the social and cultural are causally implicated in the mental. Also, I believe that the criticisms would have more likely found their mark had Knight engaged the workings of the American Pragmatists, especially C.S. Peirce, who made it clear that cognition is embodied and socially shaped (Everett, forthcoming). Since Chomsky was influenced by Peirce (in particular via Peirce's notion of 'abduction' or 'retroduction'), one does wonder why he, Chomsky, failed to engage with more significant points of Peirce's philosophy. With all of Knight's criticisms, and even to some degree with his particular Marxist perspective on the importance of integrating the social and the mental, I am in strong agreement. But were I working in the Chomskyan paradigm, I would not feel that the nail had in fact been hit on the head. Crucial arguments are missing. Still, the points are well taken and should be explored more in the future.

Knight's exploration of Chomsky's politics, linguistics, and intellectual history is unparalleled. No other study has provided such a full understanding of Chomsky's background, intellectual foibles, objectives, inconsistencies, and genius. If Knight had himself been more linguistically analytic, probing ways in which Chomsky's own objectives are short-changed by his failure to see language as a communicative tool for building society, it would have been stronger (some examples are found in Everett, 2012). But as is, it is a worthy read for all cognitive scientists. It is a rich, detailed, and well-written book, written by a well-informed outsider to the generative enterprise of Chomsky. It is full of interesting facts and criticisms that can help all linguists better understand their discipline. It isn't always as on point as it might have been, and there are moments of speculation in trying to establish historical correlations and causes. But read it!

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