Structural Linguistics in the 21st Century

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Contents

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25: *Linguist List* posting 34.3235, 2023.
26: *Linguist List* posting 34.3165, 2023.
27: *Classical Literature* 1.24–9, 2023.
28: *Linguist List* posting 35.728, 2024.
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Introduction

This book is written to bring up to date a story which I began in a book I wrote in 1980, *Schools of Linguistics*. That book seemed to meet a need— it was translated into several foreign languages—and I have often been asked whether I was going to produce a new edition to cover the period, approaching half a century now, since it appeared. But when I looked into this, I realized that an extended *Schools*, discussing recent developments in the same style as that book, was not going to be possible. Linguistics, and the academic world more widely, have changed too much.

For most of the twentieth century, new ideas in humanities subjects such as linguistics emerged in particular places and were developed largely by their inventor and his colleagues in those places. Geography mattered. Academics would read publications from distant places in journals and books, and occasionally they might travel to a conference overseas; but there was nothing like the modern density of communication created first by cheap air travel and later, and more importantly, by e-mail and the World Wide Web. Hence, in the world as it was before 1980, it made good sense to describe linguistic developments under headings like "the Prague School", "the London School", and others.

That world is no more. Plenty of new things are happening in linguistics, but they are not happening within neatly-separated geographic silos. New work is popping up here, there, and everywhere. Academic collaborations are no longer heavily constrained by geography. (One of my own recent articles was co-authored with an academic I have never met and who lives on the far side of the Earth. Nowadays that is routine; fifty years ago it would barely have been possible.) All this is good, but it means that a picture of the linguistics of recent decades must be painted in a different style from that of *Schools of Linguistics*. What is needed now is a sampler, illustrating the diversity of the present-day discipline through miniature portraits of a wide variety of recent work (together with a few glances back at the twentieth century for contrast).

When I realized that, I realized also that I had already produced the material for such a sampler. I have always enjoyed writing book reviews,

and I strive to make my reviews show not just whether a new publication is worth reading but how the original ideas in it relate to wider currents in linguistics and in intellectual life more generally. For twenty years I have been lucky enough to review regularly for an online publication, the Linguist List, which allows me to select the books I want to review. As a result, my assembled book reviews add up to a rather complete conspectus of significant new developments in the discipline. This book consists largely of an edited selection of those of my reviews which do most to contribute to a portrait of recent linguistics, in the style appropriate to the subject as it functions today. When I happen never to have written a suitable review on some worthwhile topic, I cover it here in a freshly-written chapter.

By the end of the twentieth century, there had come to be a single dominant school of linguistics worldwide, Noam Chomsky's "generative grammar" school. This global dominance was brought about in part by the factors already discussed which have reduced the significance of geography, but also by a triumphalist attitude among members of that school. Back when generative grammar first emerged on the scene, one pair of observers commented on its "eclipsing stance" (C.F. and F.M. Voegelin 1963: 12), and that stance continued: generative linguists were wont to insist that their version of the discipline was the only worthwhile version —other schools, according to them, were just misguided (if they were even noticed at all). E.F.K. Koerner (1995: 5) listed a number of generativists, beginning with Chomsky himself, whose writings made it explicit "that [for them] linguistics was made a science only … by Chomsky, and that previous work was totally inadequate, barring a few minor incidental insights foreshadowing the 'revolution' in the field". And the generativists succeeded in persuading many onlookers of this, so that the outside world often took it that the discipline of linguistics had scarcely existed before the publication of Chomsky's 1957 book *Syntactic Structures*.

The central tenet of Chomskyan linguistics was that human languages are not cultural institutions but an aspect of human biology. Language structure is largely fixed by our genes, just as (uncontroversially) the structure of our bodies is genetically determined; as Chomsky (1980: 134) put it, "we do not really learn language; rather, grammar grows in the mind". As a corollary, all the languages of the world must be structurally very similar, differing only in unimportant details—all languages share the

same inborn "Universal Grammar". Chomsky has often said that if a Martian visited Earth, he "would conclude that all humans speak the same language, with surface variation" (*Economist* 2023). (This makes a vivid illustration of his point of view—but Martians are purely imaginary creatures: in reality, we can no more tell how our world would appear to a Martian than how it would appear to a unicorn.)

Set out bluntly as I have done, the ideas of the generativists sound extraordinary—and I certainly believe they are quite wrong: there is no evidence for them, and masses of evidence against them. But the generative linguists were not much interested in empirical evidence, holding that a native speaker of a language could gain access to all the data needed for a complete description of that language simply by consulting his intuitions. I have discussed at length the wrongness of generative linguistics (together with some of the sociological factors which allowed such an implausible intellectual paradigm to be widely accepted) in other writings (Sampson 2005, 2017), and I shall not rehearse the arguments here. For present purposes what matters is that, improbable as it might seem, in the late twentieth century this "generative" paradigm was very widely taken to be the truth about human language.

The generative school eventually generated an internal opposition from within its own membership. Chapter 2 of the present book reviews an account of a war that developed between two strands of generative linguistics: "interpretative semantics", led by Chomsky, versus "generative semantics", led by his fellow-American George Lakoff. In due course "generative semantics" mutated into what Lakoff and its other proponents saw as a comprehensive paradigm, Cognitive Linguistics, which was quite separate from (and heatedly opposed to) Chomskyan linguistics. For many years, after 1980, Cognitive Linguistics was perhaps the only grouping that might have been regarded as a new "school of linguistics" to have emerged; it continues to have adherents today, though we shall see (pp. 23–4) that its current manifestation seems more notable for hype than for substantive content.

Just the most recent of my reviews (chapter 28 here) describes a movement which, in my judgement, has the potential to become a real "school of linguistics", in the sense that acceptance of it would seem to imply novel ways of thinking about and studying pretty well every aspect of human language, and that it appears solid enough to be taken very seriously. (Remarkably, like twentieth-century schools of linguistics it

even possesses a geographical homeland: many of its practitioners work in one area of the USA, and one not traditionally associated with notable intellectual advances.) But at the time of writing it is too soon to know whether Joan Bybee's "usage-based linguistics" will win general acceptance, or prove to be just a flash in the pan.

When I wrote about the generative school of linguistics in 1980, expressing scepticism felt like rowing against a strong current. But by the 2020s the current is flowing the other way. Generative linguists are still with us—to quote a famous remark, "science makes progress funeral by funeral"*—but their views are no longer accorded the level of respect they took for granted forty years ago. Paul Ibbotson and Michael Tomasello wrote in 2016 that

> Recently … cognitive scientists and linguists have abandoned Chomsky's "universal grammar" in droves because of new research examining many different languages—and the way young children learn to understand and speak the tongues of their communities.

In this book we shall be sampling some of this new research.

That does not mean that all the new work is entirely disconnected from anything that went before. In many cases, successful 21st-century approaches to language description represent a rehabilitation of longstanding lines of research that never went entirely away, but which were marginalized during the generativist decades, so that their findings tended to be published in second-rank journals, they received little or no attention in basic undergraduate linguistics courses, and so on. One of the most original minds currently contributing to linguistics and who has no patience with the generative school, Johanna Nichols—we shall be looking at some of her work in chapter 11 below—has written (2007: 235–6) about

> a decades-long marginalization of non-formal linguistics … Beginning in the late 1950s, field and descriptive linguistics were not merely marginalized, but dropped entirely from some linguistics departments and treated caustically in public discourse by formal theoreticians.

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 * A number of different individuals have been credited as the originators of this remark. For an attempt to trace precisely who should receive ultimate credit for it, see <quoteinvestigator.com/2017/09/25/progress>, accessed 4 Jan 2024.

And she continued "The same half-century saw a similar (if less caustic) marginalization of historical linguistics". Work reconstructing the pre-history of languages and establishing their ultimate family relationships is how linguistics as a distinct academic discipline began in the nineteenth century; but the generative school had little to contribute to this topic, so it faded into the background for several decades. Now, it is resurrected, and like other "resurrected" areas of the discipline it is being pursued in some novel and exciting ways—in the case of historical linguistics, see for instance chapter 22 below.

It is also true that 21st-century linguists who have moved away from the generative paradigm have not always been thoroughgoing in their rejection of it. We shall see that sometimes, while writing about a topic which on the face of it has little relationship with the concerns of generative grammar, linguists retain (perhaps unconsciously) some assumption introduced by the generative school which was so widely accepted that it was mistaken for a self-evident axiom even by scholars who do not identify with that school. (See chapter 17, for example, on the question of intuitions as data.) It will be years yet before the up-to-date discipline of linguistics bears no marks at all of the reign of generativism from which it has been emerging (and perhaps it is not desirable for the recent history of the discipline to be expunged so completely).

Although most of the chapters that follow are based on published book reviews or "review articles", with footnotes giving publication details of the books in question, I have edited the texts for the purposes of the present book. In the first place, I have prefaced each chapter with a newly-written paragraph indicating how the book discussed contributes distinctively to the modern discipline. Where, with hindsight, I have seen ways in which my original wording could be improved, I use the improved wording here. When a review appeared several years ago and important new and relevant work has appeared since, I add in the respective references. I haven't set out to disguise the origins of the chapters, for instance by changing present to past tenses, but in various trivial ways I have adapted the original published texts to make them read more smoothly when gathered together here, for instance eliminating inconsistencies between various publishers' "house styles".

I have also omitted some passages from the original publications which are less relevant to the purposes of this book. Many book reviews contain a paragraph identifying serious misprints or errors of fact found in the

book under review. This serves a useful purpose when the book is new and readers are wondering whether to get hold of a copy, but in the context of the present book what matter are the ideas and theories discussed in a publication, and what these tell us about the direction in which the discipline is developing. So (except in one specimen case, chapter 28) I have deleted material which served only to show whether a book was technically well produced by its publisher and author, provided that the deleted material did not affect the substantive content of the relevant book.

That does not mean, of course, that I have deleted criticisms of the contents of the books reviewed, or challenges to their claims. Although in overall terms I see 21st-century linguistics as a clear improvement on what went before, I have not written this book as a shill for all aspects of the new linguistics. Identifying questionable aspects of new ideas is one of the most valuable functions of a book reviewer (and one which an author worth his salt will welcome—knowledge advances through debate between alternative points of view). I cannot pretend that there is a clear dividing line between material I have chosen to delete and critical material that I have kept.

The chapters are arranged roughly in chronological order, though in some cases I have deviated from that sequence—for instance chapter 2 is about a recent book, but is placed early because it describes early intellectual developments. Furthermore, although a large change in linguistics coincided roughly with the millennium, the discipline obviously did not change overnight with the figures on the calendar; a few early chapters discuss books which appeared in the closing years of the old century.

What kind of picture does this "sampler" of current linguistics give us?

In the first place, it is a picture of a discipline that is more healthily open than the generative linguistics which preceded it. Noam Chomsky often asserted that linguistics was a branch of cognitive psychology (e.g. Chomsky 1972: 1), but there were few references to specific findings of psychology in the writings of Chomsky or other generativists. (Indeed, it was often cognitive psychologists, such as Michael Tomasello or Stephen Levinson, who led opposition to the generative paradigm, arguing that Universal Grammar simply cannot be right—e.g. Tomasello 2003, Evans and Levinson 2009.) On the whole, generative linguists seemed content to cultivate their own garden and to ignore anything happening in other disciplines. But intellectual isolation is never a good idea. Departmental boundaries are artificial administrative conveniences; any subject should

be open to contributions and challenges from neighbouring disciplines, and should contribute to and challenge them in turn. So it is good to see that linguistics is now forging links with subjects as diverse as anthropology (see chapter 24), genomics (chapter 20), psychology (chapter 13), politics (chapters 18 and 26), and others.

Also, before the reign of the generative school, researchers in humanities subjects such as linguistics acknowledged a duty to engage in dialogue with the general educated public. It is the public, after all, whose taxes pay academic salaries and university overheads. Laymen understand that it may be impossible to make cutting-edge research in subjects like physics or mathematics comprehensible to them (though G.H. Hardy, an expert in a quite abstruse branch of pure maths, found the time to write *A Mathematician's Apology* (1940), which succeeded very well in showing non-mathematicians what mathematicians are trying to achieve). On the other hand, it is not clear that there is ever any good excuse for humanities subjects (or "social sciences", so-called) to be similarly inaccessible. Generative linguistics, though, often seemed a haughty subject which saw the taxpayer as privileged to be allowed to pay for linguists' salaries and travel to conferences in congenial venues, with no feeling of reciprocal obligation—linguists' writings often seemed to be deliberately made opaque to outsiders, for instance containing forests of acronyms which in many cases could perfectly well have been replaced by ordinary English wording.

(Not that this attitude is peculiar to linguistics. The maths teacher and education blogger Greg Ashman recently made an exasperated comment which many educated non-academics these days would echo (Ashman 2023): "In serious fields of scholarly inquiry, the goal is to make the complex appear simple. … [But] the social sciences … try to make the commonplace sound complicated.")

Apart from any general wish to make their subject look impressively opaque to outsiders, generative theorists have a special reason for making heavy use of maths-like symbolic formalisms. As Martin Haspelmath and Balthasar Bickel, two non-generative linguists, point out in writing quoted below (pp. 117–18), the generative school have always believed not only that all human languages are cut to a common pattern ("Universal Grammar"), but that this common pattern needs to be reflected in a grammatical notation formalized in such a way as to allow only "possible human languages" to be defined, providing no way of describing languages which

conflict with Universal Grammar. As Haspelmath and Bickel rightly say, this is irrational. Even if one believes that the range of possible human languages is narrowly limited, the sensible approach is to describe languages in a way that makes few assumptions about those limits, and to look and discover what universal features turn out to emerge from the descriptions when we have them. That is what other disciplines do. But generative linguists do not agree, and insist on encoding their Universal Grammar theories in their opaque descriptive notations. And, as Matthew Dryer (2006: 217) notes, this is nowadays one of the points which linguists cling on to even if they believe they have rejected the generative approach. As a result, Johanna Nichols (2007: 232n2) comments in words which many of us would echo: "after 40 years of reading linguistics extensively, I find it easier to read and understand the impact of a random article in an unfamiliar biological, earth, or social science than a journal article in formal syntax dealing with a language that I know".

In the 21st century, newer linguistics is opening up in terms of public accessibility too. Some current linguistic work is about topics which might well have been chosen more because the public find them interesting than because they lead to deep theoretical insights—consider chapter 19, on house names, for instance. But even when research is theoretical and quantitative, in the 21st century it tends to be written up without gratuitous obscurity. Chapter 7 discusses a book by Harald Baayen which involves deep statistical reasoning and is no-one's (not even a mathematician's) idea of an easy read, but Baayen goes to considerable lengths to guide the reader through the conceptual jungle and to keep the exposition as simple as the material allows.

Another characteristic of the new linguistics is an attitude I think of as realism. When Chomsky claimed that all the world's humans speak what are in effect mildly diverse dialects of a single universal language, a natural response would be "Come off it, old chap—you can't really expect us to believe that". This propensity to make assertions which strain credulity is not specific to Chomsky—it is pervasive among linguists of the generative school. Thus, Cliff Goddard (e.g. 2015) is one of many generative linguists who hold that there are no new concepts, in the sense that every idea expressed by the current or future vocabulary of any possible human language is reducible to combinations of a small number of semantic atoms that are universal and innate in human minds (in 2015 Goddard believed there were just 65 atoms—see p. 123 below). If God-

dard is telling us that ideas like *carburettor* or *rococo* are nothing more than arrangements of concepts that were already present in the minds of Amazon rainforest dwellers a thousand years ago, I'm afraid that again my instinctive response is "Pull the other one". The beliefs of the new linguists seem not to strain credulity in this fashion. They are not trivial, often they say things that are worth knowing and which we did not know before, but once we are told them we have no particular difficulty in understanding and perhaps accepting them.

There are, however, less attractive aspects of current linguistics, relative at least to the linguistics of the first two-thirds of the twentieth century. But the weak points I perceive are not specific to linguistics; they apply to many disciplines (though linguistics is the discipline I know best), because they are largely consequences of a revolution in the organization of universities which, in Britain at least, took place shortly after my *Schools* book was published, ending the system under which Government had been kept at "arm's length" from the management of universities, and transforming the university-teaching profession from a vocation into a job. (In Britain this revolution followed rather abruptly from government approval of the recommendations of an enquiry into university efficiency which reported in 1985—see e.g. Ball and Wilkinson 1994, Greatrix 2015.) In Continental Europe similar changes have occurred rather more recently. In the USA they seem to have occurred less abruptly and earlier, which is perhaps why they affected the generative school of linguistics, American in origin, as much as what has succeeded it.

Traditionally, the main duties of a university teacher were to master the scholarship of his subject and to teach it to rising generations. At least in the humanities, researching and publishing the outcome of original research was something of an optional extra: it was mildly encouraged, and most dons did a little, if only for the sake of their self-respect, but plenty of them had satisfying careers while publishing quite little. For those academics who chose to be active researchers, their writing was a significant contributor to their sense of self-worth, and it was what they expected to be judged by in the eyes of colleagues whose opinion they valued. Hence, no effort to get their publications as right as possible was too much. Their watchword was "Always verify your references".* If you

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* This saying is attributed to Martin Routh, nineteenth-century President of Magdalen College, Oxford, in response to a request for advice from a young scholar (Annan 1999: 6n).

refer to a fact, check that it is a fact, not something that "everybody knows", perhaps mistakenly. If you quote someone else's view, make sure your quotation is exact and that quoting it out of context is not misleading by consulting the original rather than relying on secondary sources.

Nowadays, all university teachers are required to try constantly to get writing into print, because the flow of public funding into higher education institutions has been made to depend heavily on the institutions' published research output, and universities have come to be run by a cadre of managers who have little interest in academic values but a great deal of interest in money. A don can win tenure and promotions by publishing more;* he will gain no prizes for spending time deepening his knowledge of past scholarship and broadening the intellectual hinterland on which his own writing draws.

Inevitably, the profession has adapted to this new pattern of sticks and carrots. Publications often contain straightforward errors of fact which a previous donnish generation would have blushed to allow into print; checking is less thorough now, because it takes time and effort that could be used to begin working on the next publication, and someone who writes because his employer requires it will naturally invest less effort into striving for perfection. When one feels that one is working for an organization rather than for oneself, there is an inevitable tendency to replace optimizing by what the economist and Nobel laureate Herbert Simon (1947) called "satisficing": doing one's work well enough to hold down one's job, but not going the second mile. R.M.W. Dixon (2010–12: vol. 1, p. 66) comments that "a good deal of published work on linguistics is sloppy and unreliable. … in well over half the papers and books coming out nowadays there are substantial errors of fact and/or interpretation", and he gives a number of outrageous examples. (As discussed above, I have eliminated many references to mistakes from the versions of my book reviews reprinted here—but, for instance, consider the examples I criticize on pp. 198–9 or 223–5 below, which are nothing unusual for the 21st century but which would not have occurred in the scholarly writing of sixty years ago.) And because today's dons know less in depth about the scholarship of the past, and because the system encourages them to boast

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 * Technically, "tenure" was abolished in British universities as part of the 1980s academic revolution, but there remains a large difference between the positions of a university teacher on short-term contracts, and one who has achieved a continuing appointment.

about their prowess in order to boost the status of their institution compared to its rivals, some of them form an exaggerated idea of their own originality and intellectual significance—see for instance p. 23. Understanding these changes in the academic profession is just as relevant as understanding specific new linguistic concepts for anyone who wants to grasp where the discipline is today.

The nature of scholarly publication has been changed by this academic revolution. Book reviews, such as those on which this book is based, used to be a very valuable component of the stream of published writing in a discipline: reviews brought worthwhile new contributions to the attention of the relevant academic community, and they initiated the process of assessing novel ideas. Any significant new book would be reviewed, often by leading names in its field, in all the main linguistics journals. But, under the new régime, a don gains brownie points for his institution only by winning competitions against the staff of other institutions. An article in a journal counts, because any respectable journal receives far more submissions than it has room to accept. But book reviews are normally commissioned by a journal editor; there is no competition, hence no brownie points for writing them—so academics do not want to spend their time that way, and few reviews are written. (The world's leading linguistics journal, *Language*, published fifty book reviews in 1965, the year I first subscribed to it; in 2022 it ran just two, though I believe there were no fewer linguistics books appearing. The European journal *Lingua* no longer publishes reviews.) Truth tends to emerge from contention between alternative opinions, but nowadays some linguists prefer to focus on the work of a little coterie, in isolation from the discipline more generally. By annihilating distance, the Internet has made it easy for academics to seek out and ally only with others who share their specific viewpoint, avoiding healthy interaction with others' thinking.

All this is not fatal to the progress of scholarship, and one of the aims of this book is to steer readers towards the new ideas and new publications that are worth reading, avoiding the dross. But the revolution has slowed progress down, and it means that one has to take extra care when reading linguistic literature. It was always the case, reading any academic publication, that one had to ask "How robust are this author's arguments? Has he made his case successfully?" Nowadays, one has to go further and ask "Do we trust the facts on which the author bases his arguments?", and perhaps "Is the author himself convinced, or does he just think that his

case could be right, and that anyway it gives him another publication to list on his c.v.?" One learns to adopt the appropriate degree of cynicism, and with that as armour scholarship continues to make headway. But it is a pity, to say the least, that this cynicism has become necessary.

For this book I have selected topics where cynicism is not needed. I have reviewed many books in the 21st century; the academic revolution occurred halfway through my teaching career, when I was already established, so I was able to ignore it and continue working as before. (Younger scholars are not so lucky.) A few books I have reviewed were stinkers, but I am certainly not using those reviews in this sampler. Most of the ideas examined in the various chapters that follow have real value, and help to lead us towards a better understanding than we had before of the phenomenon we call language.

Even so, those who have read my earlier book *Schools of Linguistics* will perhaps find this one less satisfying. They might feel that the 1980 book offered a coherent portrait of a discipline, whereas the present book pictures 21st-century linguistics as a scattering of topics with little overall theme. And they would be right about that—but the contrast is there in the two books because the discipline itself has changed. In the twentieth century, linguistics had a fairly coherent central focus at any given time and place, with other aspects of the subject arrayed round it in subsidiary positions, as a painter's portrait of a man will usually have the face as focus, with other body parts and the man's physical surroundings allotted subordinate roles in the composition. The focus of linguistics shifted over time—in mid-century it was the phoneme, in the late twentieth century it was syntax—but the discipline remained coherent in one way or another. In the present century, that coherence is gone. Inevitably, this makes any faithful picture of the modern discipline rather less aesthetically satisfying. But that is how linguistics is, today.

And I believe it is how linguistics needs to be. Human language is not like physics, where researchers can reasonably strive towards one Grand Unifying Theory. Language really is a heap of separate elements and systems, colliding with one another like waves in a choppy sea. We can choose to revel in that fact or to find its messiness unattractive, but this is the reality.

2

Because the Stakes are so Low

As a prelude to the linguistics of the present century, in this chapter we look at the most striking development in the discipline towards the end of the twentieth century, which came to a head just too late to be covered in my 1980 textbook. Around that period, internecine wars between adherents of different linguistic theories had been fought to a standstill, and the years leading up to the millennium were not an inspiring period in the history of linguistics.*

Academics commonly offer their theories to the public as if they are the product of disinterested scholarship in which logic and evidence alone are relevant, and personalities count for nothing. Some of them believe that that is the only way academic discourse *should* be expressed. Another point of view is that this style amounts to claiming an unfair advantage in the battle of ideas, by concealing the fact that theories have often been shaped in part by non-rational considerations. Newcomers to a field may find it difficult to evaluate the current state of play if they are kept in the dark about the clashes of personality which helped to mould it.

Randy Harris's *Linguistics Wars*, a new edition of a book originally published in 1993, takes the second point of view to an extreme.† He offers us an unbuttoned history of generative linguistics, focusing particularly on the period between roughly 1965 and 1980 which was marked by savage warfare between two camps, called "interpretative semantics" and "generative semantics" and led respectively by Noam Chomsky and George Lakoff, and he gives us a very full picture of the emotional and ethical differences which existed alongside and partly

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 * My chapter title alludes to a well-known saying about academic politics. One version was quoted by Lawrence Hussman in the Summer 1979 *Antioch Review*: "Thus the remark attributed to the California politico Jess Unruh that academic politics are the dirtiest politics because the stakes are so low." (The same saying has also been attributed in various sources to several other individuals.)

† R.A. Harris, *The Linguistics Wars: Chomsky, Lakoff, and the battle over deep structure*, second edition. O.U.P., 2021.

explained their intellectual disagreements. This is linguistics red in tooth and claw. Harris describes, for instance, a "vitriolic" public debate between Lakoff and Ray Jackendoff in a plenary session of the 1969 Linguistic Society of America conference, which ended in the exchange "Well, fuck you"—"Well, fuck you, George". The temperature dropped much closer to normal after 1980, but the conflicts of those years continue to have reverberations today, and Harris's new edition brings the story up to date in the early 21st century.

The first thing to say about *The Linguistics Wars* is that the level of detail is remarkable. One would think that the author had himself been involved in the battles he describes. In fact he was too young for that, but apart from reading the publications of the time extensively he has inter-viewed fifteen of the leading protagonists, and corresponded at length with many more. (Harris avoids expressing a position of his own on any of the issues, which is probably crucial to the success of the book. If the material had been set out in terms of linguists moving towards or away from the truth according to Harris, it would have read as just a belated salvo in a war that is long over.)

The 1950s and 1960s were a time when physics and other natural sciences enjoyed great prestige (much more than they do today), so when general linguistics began to be a recognized discipline, it branded itself "the scientific study of language". Generative grammar gained traction in the academic world by claiming to provide a scientific theory of syntax— which had wider appeal than phonology, the aspect of language with which earlier linguists had been mainly concerned, because syntax is more closely related than phonology to human thought and reason.

The trouble was, few academics who studied language and languages had much concept of what a "science" is, and they were unqualified to assess the claim of generative grammar to be one.

In reality, from the word go there was nothing scientific about generative grammar. The essence of science is that it makes falsifiable assertions—claims which can be checked against reality and refuted if they are mistaken. Chomsky's *Syntactic Structures* (1957) assumed that any language can be treated as an infinitely-numerous set of grammatical sentences, and discussed algebraic systems—"grammars"—which "generate" sets of sentences, in the same sense as an equation $(x - a)^2 + (y - b)^2 = r^2$ generates the infinitely-numerous set of geometrical points which constitute a circle. Chomsky used these concepts in *Syntactic*

Structures to present two falsifiable theories about human language. He defined finite-state and phrase-structure grammar types, each of which is capable of generating some sets of sentences but not others: so that the statements "Every human language is generated by some finite-state grammar", or "Every human language is generated by some phrase-structure grammar", are both falsifiable—they are falsified if it can be shown that some real human language is one of the sets of sentences for which no grammar of the respective type is available. But Chomsky introduced these concepts of formal grammar only in order to argue that the corresponding theories are indeed false—English and other languages are impossible to define using either the finite-state or the phrase-structure formalisms. The nearest *Syntactic Structures* came to offering a falsifiable theory which might be true was to adumbrate a concept of "transform-ational grammar" which was left undefined, although some examples of transformational rules for English were given, and there were many references to a fuller statement in a then-unpublished manuscript, *The Logical Structure of Linguistic Theory*.

This concept of a hierarchy of different grammar-types which define different ranges of formal languages had emerged from collaboration between Chomsky and his mentor the French mathematician Marcel-Paul Schützenberger, who spent some time at the IBM research centre at Yorktown Heights, New York State. (When Chomsky wrote about the material for more technical readerships, he either co-authored with Schützenberger or attributed the relevant theorems to Schützenberger and other mathematicians; see e.g. Chomsky 1963, Schützenberger 1963: 246, Chomsky and Schützenberger 1967.) Formal grammar theory matters in computer science, because where a programming language such as Pascal or Python fits into the hierarchy of formal languages affects the design of compiler software which translates a computer program out of that language into machine instructions. On the other hand IBM had no reason to concern itself with applying these categories to human languages, which I take to have been Chomsky's side of the collaboration. When the *Logical Structure of Linguistic Theory* manuscript, which should have turned "transformational grammar" into a specific falsifiable theory and was all Chomsky's own work, was eventually published in 1975, it became hard to escape the conclusion that the solid maths of the grammar hierarchy must have been very much Schützenberger's responsibility (though linguists had taken to calling it the "Chomsky hierarchy"), because *The*

Logical Structure of Linguistic Theory was a floundering, mathematically semi-literate compilation (Sampson 1979b). There was no falsifiable theory of transformational grammar in *The Logical Structure of Linguistic Theory*—but linguists did not notice that, because few of them read the book when it was published. Randy Harris calls it "the fountainhead of Chomskyan linguistics", but he is the only person other than me that I have ever known to have read it. Many linguists have alluded to the title briefly as underpinning Chomsky's ideas, but so far as I remember I have never seen anyone quote a specific passage or page-reference from it.*

Harris quotes one leading generative semanticist, "Haj" Ross, as saying, in an interview with Israel Shenker (1972), "There's no question that Chomsky is a genius and has … created a field of mathematics which didn't exist before". Ross can only have been referring to the grammar hierarchy, so his remark illustrates just how wildly linguists were mis-evaluating Chomsky's achievement.

And insofar as Chomsky did in later writings give informal explanations of what he meant by "transformational rules", these seemed incompatible with the examples he had offered. Randy Harris rightly describes the *Syntactic Structures* transformation Affix Hopping (Chomsky 1957: 39), which accounts for the possible sequences of English auxiliary verbs in a strikingly neat way, as "one of [the] most rhetorically successful rules in Chomsky's system". But transformations were supposed to be rules which modify morpheme sequences exclusively by reference to the grammatical tree structure dominating the morphemes. That is why, for instance, a young child learning how to form questions in English allegedly knows innately that the rule which fronts a verb in the corresponding statement might be a rule which applies to the main verb of the statement (as it in fact is), but could not be a rule which applies, say, to its first verb irrespective of that verb's location in the parse tree (Chomsky 1976: 30–3).† But Affix Hopping ignores tree-structure; it applies to any string of morphemes of the relevant categories. So, Affix Hopping was responsible for winning many readers over to the "theory of transform-

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* In response to a preprint version of this chapter, Hans-Martin Gärtner of Budapest tells me that he too has read Chomsky 1975. That makes three of us.

† Chomsky thought that children must know this innately, because for some reason he believed that evidence showing which kind of rule is used in English would be too rare in practice for the average child to encounter. Utterances with the relevant structure are in fact fairly frequent in the kind of speech children hear (Sampson 2005: 43–7, 79–81).

ational grammar", yet insofar as there ever was such a theory, Affix Hopping refuted it.

Furthermore, linguists other than Chomsky (e.g. Stanley Peters and Robert Ritchie 1973) tried to sharpen up the concept of transformational grammar sufficiently to check that there are formal languages which are not definable within the formalism, i.e. that it was in principle falsifiable; and they found that it wasn't: *any* formal language that can be defined at all can be defined by some transformational grammar. So I was wrong to say that Affix Hopping refuted the theory: there was no theory to refute.

Much later, Chomsky claimed that "generative grammar" was never about defining languages as sets of grammatical sentences anyway; "The concepts 'well-formed' and 'grammatical' … played virtually no role in early work on generative grammar except in informal exposition, or since" (Chomsky 1995: 213 n. 7). Harris sees this remark as worth quoting because it is so plainly untrue. In the opening pages of *Syntactic Structures* Chomsky had written "The fundamental aim in the linguistic analysis of a language L is to separate the *grammatical* sequences which are the sentences of L from the *ungrammatical* sequences which are not sentences of L and to study the structure of the grammatical sequences" (Chomsky's italics)—and this remains his position; as recently as 2023, Chomsky described linguists analysing a given language as seeking a theory which answers the question "Why are these—but not those—sentences considered grammatical?" (Chomsky, Roberts, and Watumull 2023). Harris quotes Geoffrey Pullum as describing Chomsky's 1995 remark as a "direct falsehood". He points out that this kind of discrepancy between the public record and Chomsky's statements about his own and other linguists' work has been a recurrent problem, and he spends several pages on Chomsky's uneasy relationship with veracity, quoting various scholars who have commented on it; as Margaret Boden put it, Chomsky "cannot be relied on to tell the truth". Explanations for this differ. According to Lakoff, Chomsky "fights dirty when he argues", while Paul Postal "came to the conclusion that everything he says is false. He will lie just for the fun of it". Harris himself "is more comfortable with the view that arrogance gives [Chomsky] an unreliability with the truth than … with the view that he lies for sport", and he raises the question whether Chomsky may be "delusional".

But withdrawing grammaticality from the range of empirical facts about which Chomsky's theory claims to make predictions is interesting

also because it was one of many ways in which Chomsky's writings after *Syntactic Structures* made his generative theory a clear case of what the philosopher of science Imre Lakatos called "degenerating problemshifts" (Lakatos 1970: 118): theories which defend themselves against adverse data by reducing their range of testable predictions, so that they become increasingly invulnerable to refutation at the cost of becoming empty. Karl Marx's theory of history, for instance, is often seen as a degenerating problemshift (Popper 1969: 37). It began with a respectable falsifiable hypothesis: all societies were bound to evolve through the sequence feudal–capitalist–socialist–communist, with those societies in which capitalism was most fully developed, such as Britain and the USA, reaching the communist stage earlier than societies such as Russia or China which were still feudal or only in the earliest stage of capitalism. The reason why Marxism later became vague was that its originally clear predictions were equally clearly falsified. If generative grammar had been a falsifiable theory, excluding grammaticality from its range of predictions would have made it much less so. (But since in fact generative grammar began empty, it could not become emptier.)

And very few of the many linguists described by Randy Harris as proposing revisions, yielding an alphabet soup of novel grammar formalisms—Arc Pair Grammar, Lexical–Functional Grammar, Daughter-Dependency Grammar, and so forth—had much interest in turning the theory into something that could be taken seriously as a "scientific study of syntax". They were not sophisticated enough about science to appreciate that there was a problem.

Some of the would-be "scientific" productions of generative linguists were reminiscent of the cargo cults found on various Pacific islands in the Second World War (and earlier). The untutored natives saw Japanese or Americans arriving to build airstrips, after which aeroplanes landed bringing quantities of desirable goods; so the natives imitated as best they could, clearing strips and lashing "control towers" together from bamboo, in the hope that they too would receive bounty from the sky. David Johnson and Paul Postal's theory of Arc Pair Grammar (Johnson and Postal 1980), which Randy Harris sees as having been perhaps "the most precisely and rigorously formalized generative model", was developed at a time when one of the hottest elements of theoretical physics was Richard Feynman's "Feynman diagrams", which model the possible interactions of electrons and photons as tracks meeting and separating, as a step towards

calculating the probabilities of overall outcomes. Tracks in Feynman diagrams are typically curvy rather than straight, because particles do not have to travel in straight lines—in Feynman's quantum physics, they go every possible way simultaneously. Some tracks are shown as simple lines, others as wavy lines, to distinguish the paths of electrons, which have direction (first here, then there) from those of photons, which are neutral between coming and going. Similarly, linguists had typically diagrammed sentence structures as trees with straight branches, but lines in Arc Pair Grammar diagrams are drawn curvy. Arc Pair Grammar lines come in two varieties: simple lines, versus wavy (or at least sawtoothed). Arc Pair Grammar diagrams must surely have been inspired by the quantum-theory precedent. But the difference is that Feynman's diagrams enable accurate predictions about empirical facts; Feynman (1985: 7) told us that the theory yielded a result for the magnetic moment of the electron which matched observation to ten significant figures—"If you were to measure the distance from Los Angeles to New York to this accuracy, it would be exact to the thickness of a human hair." I am not aware of any facts which Arc Pair Grammar explains and which would not be explained without it. This, and many other works in the generative grammar tradition, were pure cargo-cult linguistics.*

Generative grammar cannot be a scientific study, because the syntax of human languages is not a phenomenon to which scientific method applies. Phonology (which is all most linguists before Chomsky were concerned with) deals with behaviours which, although learned, are not under conscious control, and can reasonably be described by falsifiable general-izations. A German who wants to put the verb *geben*, "give", into the imperative does not need to think "when the ending *-en* is knocked off, the /b/ of the root will be word-final so I need to devoice it and say [gip] rather than [gib]"—unless the speaker has studied phonetics he probably will not even be aware that he uses different sounds in the different environments. But in the syntactic domain, speakers can and do think about what they want to say and how they are going to say it. The language offers a variety of well-beaten grammatical tracks, but it is always open to a speaker to choose some novel path—and if he is rhetorically successful, others may

 * I cannot guarantee that my brief account of Feynman diagrams is completely faithful to the theory—quantum physics is far from my beat. But Johnson and Postal's graphs are not related to the content of physics. The resemblance to Feynman diagrams is purely cosmetic, lending this kind of linguistics a little of the glamour which justifiably belongs to quantum theory.

follow and the novel way of putting words together may itself become well-trodden. Perhaps some speakers rarely or never exercise this freedom, but plenty of others do use it. To quote John Taylor (2012: 285),

> speakers are by no means restricted by the generalizations that they (may) have made over the data. A robust finding from our investigation is that speakers are happy to go beyond the generalizations and the instances that they sanction. Speakers, in other words, are prone to *innovate* with respect to previous usage, using words in ways not already sanctioned by previous experience, extending the usage range of idioms and constructions …

Consequently the idea of a falsifiable definition of the range of grammatical sentences of a language does not make sense. Extending that range is a normal part of language behaviour.

This was concealed by Chomsky's peculiar use of the term "creative", which linguists accepted without questioning it. Chomsky has frequently called language behaviour "creative" to mean merely that speakers produce new examples from an infinitely large range of possibilities, rather than repeating one or another of a finite set of sentences. But if that makes behaviour "creative", then someone who spends his time multiplying pairs of numbers together would have to be described as acting creatively. There are certainly infinitely many different pairs of integers, and someone who has been taught arithmetic can multiply any of them (subject, the same as in the linguistic case, to constraints on memory and so forth). Normally, that would be seen as uncreative behaviour. In everyday life, outside linguistics, we call an activity "creative" only if new examples typically have an unexpected quality: they somehow fall at least slightly outside the range of past examples (Sampson 2016). In that everyday sense, generative grammar is founded on the assumption that syntactic behaviour is *un*creative. But in reality syntactic behaviour, like other human behaviours under the control of conscious intelligence, is creative in the full, everyday sense. So it is not open to scientific description.

Programming languages are called "languages", and much of Chomsky's early writing (e.g. 1956, 1959) was in computer science journals. But, in reality, programming languages make very unsuitable analogues of human languages. Programming languages certainly do have definite grammars—they would not work if they didn't. Human languages do not. Computer scientists realized before the 1960s were out that the

hope of relating the Chomsky or Schützenberger hierarchy to human language was pretty much a dead end (Hopcroft and Ullman 1969: 8–9). But linguists never explicitly recognized that.

Harris shows that the conflict between interpretative and generative semantics mutated over time into a very different kind of disagreement from the one which began it. Initially, it was a technical dispute about the directionality of the algebraic rules used to "generate" the sentences of a language. The interpretative position was that the core of a generative grammar was a system which, for each sentence, defined an abstract structure corresponding to its syntax; and two other systems separately converted this structure into, respectively, a representation of its phonetic realization, and into some kind of representation of its meaning (though both camps were very naive about what it would be to "represent meaning"). The generative semanticists wanted to start at the meaning end, and have a single system converting between meaning and pronunciation. However, the generative semanticists began noticing all kinds of properties of real-life usage which, it seemed, could not be handled by a generative grammar whichever way its rules ran—properties like dependence of meaning on non-linguistic context, irony, or the aesthetic value of literary and other language. Chomsky recognized (1976: ch. 4) that describing language and languages involves distinguishing "problems" which may in principle be solvable from "mysteries" which it seems hopeless to address in our current state of understanding, and reasonably enough he took the line that he wanted to concentrate on problems and set mysteries aside. But generative semanticists seemed to feel that linguistics in Chomsky's style actually got in the way of accounting for the aspects of language that interested them, and perhaps tacitly implied that those aspects were unreal.

Harris shows that to a large extent the clash was less a clash of ideas than of personalities. Chomsky's written style was strait-laced, but the generative semanticists went in for juvenile frivolity—their papers were full of gratuitously bawdy or otherwise skittish examples. In one entirely typical case quoted by Harris, Jim McCawley, writing as "Yuck Foo", invited the reader to "Consider the idiomatic sense of *shove X up Y's ass*. As is well known, Y must be coreferential to the indirect object of the next higher clause …". This was the hippie, flower-power era; like the hippies, who relished mocking and taunting authority figures while spending no time thinking about the actual problems of governing a country or even

running a town council, the generative semanticists were for ever coming up with quirky linguistic facts that seemed problematic for their opponents, but did little to make a detailed reality of their own alternative concept of linguistic description. Harris tells us that Lakoff

> taught his students to approach linguistics by engaging in anti-establishment thinking and trafficking in counterevidence. Somewhere, however, the imperative to save the phenomena [philosophy-of-science jargon for "account for the empirical facts"] was misplaced, and much Generative Semantics energy was increasingly devoted simply to celebrating anomalies.

It was difficult for onlookers not to be sceptical. Harris quotes Howard Lasnik: "You have to take your field seriously. You can't convey to the world that it's like a standup routine in a nightclub".

From a wider perspective, though, generative versus interpretative semantics was an internal disagreement among academics who were all fundamentally on the same side. The generative semantics people pointed to many linguistic phenomena for which the concept "rule-governed" seemed even more obviously inappropriate than it does for syntax, but they did not repudiate the programme of defining languages via the methods of science. Perhaps a human language was not a sharply-bounded set of grammatical sentences—but then we might hope for better language-definitions via, say, "Haj" Ross's concept of gradient category "squishes", or some other way. Some generative semanticists did go further; Harris quotes Jim McCawley as writing in 1973 that "generative semanticists have come to dispute the notion that one can speak coherently of a string of words … as being grammatical or ungrammatical or having a degree of grammaticality", and in 1982 "I hang my head in shame at seeing how many times I have spoken of sentences as being 'grammatical' or 'ungrammatical'"—that is, for McCawley at that point it was not just that there was more to a language than grammaticality, but that grammaticality was not a meaningful concept. (This is of course a separate issue from Chomsky's absurd claim, quoted earlier, that—irrespective of whether grammaticality is a meaningful concept—his own work did not use it.) But that just raises the question what McCawley did see the aim of linguistics as being. Coming up with numerous examples, often amusing examples, of utterances which were problematic for the generative-grammar framework (a legitimate scientific move as far as it went) did not