Battle in the Mind Fields: Class 1

John A Goldsmith

June 21, 2019

Topic 1: The graphic genealogy and visual index

1. People, groups, influences, continuity (rupture? not so much)
2. Top to bottom: time. People at the top were born later than people at the bottom
3. Left to right: linguistics, philosophy, psychology.
4. Vienna Circle, Prague Circle, Gestalt psychology …

Topic 2: The syllabus

1. What this course is all about: what you need to know to understand how we got here
2. The origins of modern linguistics
3. Philosophy and psychology. Auguste Comte, Ernst Mach, Wilhelm Wundt, Franz Brentano
4. Edward Sapir, Leonard Bloomfield; psychology in the United States
5. Roman Jakobson, Nicolas Trubetzkoy; Edmund Husserl
6. The Vienna Circle, the unity of science; cybernetics
7. American descriptivism: it was not what you think
8. Generative grammar: phonology, syntax, and the goals of the general theory

Proposal 1: Reappropriating our history

1. Disciplines, barriers and moles
2. The eternal conversation
3. Some of our neighbors: philosophy, logic, and psychology

You do not understand the answer until you understand the question to which it was the answer.

1 Why did modern linguistics emerge in the 19th century?

Topic 3: Six generations of linguists

1. Generation 1: Humboldt, Grimm, Rask, Bopp
2. Generation 2: Grassmann, Schleicher, Müller, William Dwight Whitney
3. Generation 3: Neogrammarians, Baudouin de Courtenay, Saussure
4. Generation 4: Trubetzkoy, Jakobson, Sapir, Bloomfield
5. Generation 5: Charles Hockett, Zellig Harris
6. Generation 6: Noam Chomsky, Morris Halle
Topic 4: Why is it so hard to read linguistics from the past?

1. It isn't.
2. Read the classics in order to understand how a field moves forward.
3. Has the past been accurately described? No.
4. Reappropriating our history [bis]

2: The story of Noah and Jehovah

His family, his animals, and his books.
1 The 19th century

### Topic 1: Time and history in the 19th century

1. The science of geology
2. Elements and the Periodic Table
3. Charles Darwin
4. Two crises in mathematics: first geometry, then set theory
5. The discovery of Indo-European, and William Jones
6. A place for teleology? And what is history?
7. The rise of the research university
   - (a) The Church in medieval Europe
   - (b) When it all changed: the research university set up in Berlin, 1810.
   - (c) Four generations of higher education in the United States: colleges, land-grant universities, new universities, Cold War/GI Bill universities

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2 Linguistics

### Topic 2: The first four generations

1. Generation 1: Humboldt, Grimm, Rask, Bopp
2. Generation 2: Grassmann, Schleicher, Müller, William Dwight Whitney
3. Generation 3: Neogrammarians, Baudouin de Courtenay, Ferdinand de Saussure
4. Generation 4: Trubetzkoy, Jakobson, Sapir, Bloomfield

### Topic 3: Focus on these linguists

1. William Dwight Whitney: the first great American linguist
2. Ferdinand de Saussure: saved by his students
3. Jan Baudouin de Courtenay: the establishment of modern phonology
4. Neogrammarians: the creation and evolution of language by human beings like moderns
Figure 1: 2.1 First three generations of linguists
Figure 2: 2.2 First generation of linguists
Figure 3: 2.3 William Dwight Whitney
Figure 4: 2.4 Neogrammarians
Figure 5: 2.5 Baudouin de Courtenay, Saussure, and M. Bloomfield
Figure 6: 2.6 Jan Baudouin de Courtenay
Figure 7: 2.7 Ferdinand de Saussure
# Battle in the Mind Fields: Class 3

## 19th century philosophy

John A Goldsmith  
June 21, 2019

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# Battle in the Mind Fields: Class 4
American psychology, Edward Sapir and Leonard Bloomfield
John A Goldsmith

## 1 1900-1950: Psychology in the United States

**Topic 1: Schools**

1. Structuralism: Titchener’s take on Wundt
2. Functionalism: American pragmatism
3. Behaviorism; John B. Watson
4. Gestalt psychology: immigrants from Germany
5. Depth psychology: Freud, Jung, Adler…

## 2 1900-1950: American Linguistics

**Topic 2: Edward Sapir**

1. Immigrant family
2. Franz Boas and anthropology
3. Years in exile: Ottawa
4. Ruth Benedict, Margaret Mead, depth psychology, Gestalt psychology
5. The University of Chicago
6. Yale University; Morris Swadesh and the phoneme, becoming more abstract
7. Benjamin Lee Whorf

**Topic 3: Leonard Bloomfield**

1. Immigrant family
2. Harvard, Wisconsin, Chicago, Champagne-Urbana, Ohio State University
3. The first Bloomfield, and the second
4. *Language* in 1933
5. Yale University
Figure 17: 6.1 Franz Boas
Figure 18: 6.2 Edward Sapir
Figure 19: 6.3 Whitney, Germany, and the early presidents of the LSA
1 Some timely remarks on positivism

Modern positivism is often associated with the premise that all knowledge, or all scientific knowledge, can be expressed in terms of propositions, some of which are generalizations and some of which are more basic statements of observations.

I have repeated a different statement, which taken literally does not fall within the positivistic view of knowledge: you cannot understand an answer until you know the question to which it was an answer. In some basic ways, this assumes a radical rejection of positivism. We can begin with the statements that a positivist accepts — observations, and generalizations (or “laws”), but we have only begun, because we have to figure out what the question was that someone was asking when they came up with those observations and generalizations.

2 Three larger than life figures

Topic 1: Edmund Husserl

1. Student of Brentano
2. *Logical Investigations*, phenomenology
3. Mathematics, friendship with Georg Cantor, interaction with David Hilbert.

Topic 2: Nicolai Trubetzkoy

1. Youth in Moscow (for a prince)
2. 1917: the revolution
3. Vienna
4. Working with Jakobson
5. Death in 1938

Topic 3: Roman Jakobson

1. Youth in Moscow
2. Moscow Circle of Linguistics
3. 1920: to Prague
4. Prague Linguistic Circle
5. Working with Trubetzkoy
6. Fleeing before Hitler’s Army
7. Responding to Chomsky’s remarks in *Cartesian Linguistics* (UNESCO paper)

3 Jakobson responding to Chomsky, without mentioning his name

Psychology of language, or, under the label current nowadays — ‘psycho-linguistics’ — has a long tradition despite some recent authoritative assertions\(^1\) that until recently psychologists usually remained indifferent to language, and linguists, to psychology. In the world history of science since the mid-nineteenth century one could hardly name a psychological school which did not endeavor to apply its principles and technical devices to linguistic phenomena and which did not produce representative works devoted to language. on the other hand, all of these successive doctrines left a significant imprint on

\(^1\) If you don’t know who he is referring to, well, …
contemporaneous linguistic trends. It is true that strong attractions to psychology alternate in the development of modern linguistics with no less serious repulsions, and several reasons are responsible for such temporary alienations.

In the first third of our century, at the outset of the structural bent in the science of language, there arose a strong need for applying strictly and solely linguistic, intrinsic criteria to the treatment of verbal problems. Saussure, in spite of his ardent interest in a connection between these two disciplines, warned his disciples against an excessive dependence of linguistics on psychology and insisted expressly on a radical delimitation of approaches (see, e.g., Godel, 1957). The ‘antipsychologism’ of Husserlian phenomenology, influential in continental thought of the interwar period, was another sensible factor. And, finally, as linguists complained and as Sapir, in particular, pointed out, most of the psychologists at that time were as yet too little aware “of the fundamental importance of symbolism in behavior”; he predicted that just such an insight into the specific symbolism of language “will contribute to the enrichment of psychology” (Sapir, 1929, p. 163).

Sapir’s expectation was soon fulfilled by Karl Bühler’s book (Bühler, 1934), which still is for linguists probably the most inspiring among all the contributions to psychology of language. Step by step, though with frequent relapses, psychologists dealing with language began to realize that mental operations connected with language and semiosis are essentially different from any other psychological phenomena. The necessity to master the foundations of linguistics became more and more evident. However, George Miller’s “preliminary admonitions” to psychologists for an ever deeper penetration into this intricate science remain still opportune (Miller, 1965; Miller, 1967). [R. Jakobson, *Linguistics in its relation to other sciences.*]

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2 Here he is referring to himself, as well as others.
Figure 20: 7.1 Edmund Husserl
Figure 24: 9.1 Trubetzkoy and Jakobson: early days
Figure 25: 9.2 Roman Jakobson
Figure 26: 9.3 Trubetzkoy’s versions of the phoneme
Battle in the Mind Fields: Class 6 (revised)
Developing structuralist methods: Zellig Harris

John A Goldsmith

**Topic 1: Key questions in phonology**

1. The phoneme
   (a) Inventory of sounds used for lexical or grammatical contrast
   (b) Structure of the inventory
   (c) Choice of allophones in a phoneme: Realization of a phoneme influenced by nearby sounds
   (d) Does presence of a word boundary count as a “nearby sound”? The role of boundaries. Word phonology versus utterance phonology: is that a viable distinction?

2. Morphophonemes: choice of a sound (choice of phoneme?) influenced by grammatical considerations
   (a) Choice of a sound (choice of phoneme?) influenced by grammatical considerations
   (b) Use of (apparent) phonological description to encode lexical distinctions: the abstractness controversy, and synchronic versus diachronic analysis.

3. Geometry of a phonological representation

4. General patterns that attract or repel a representation

5. How are phonological generalization factored? Factorization of phenomena into phonological description.

**Topic 2: The separation of levels controversy 1**

1. Bloomfield-Hockett-Yale versus Sapir-Zellig Harris
   (a) For Bloomfield–Hockett, linguistic analysis must have the same logic as science, which requires a clear specification of what statement rests on what. Scientific certainty of one analysis can only be as great as the certainty of what we rely on. If the phonetics is good, the phonology may be good; if the phonetics is bad, the phonology will be unreliable.
   (b) For Sapir–Harris, a grammar is a cultural creation. There is certain to be a range of different ways to approach each language, and a good way to approach one language may not be a good way to approach a second. It is not important what methods we tried when we analyzed a given language. What matters is that once we have figured out how the language works, we provide a clear and explicit account that another linguist can use to see how the language works. Today, we would say that such a clear and explicit account is a formal grammar.

2. Utterance phonology and word phonology redux.
   (a) The disagreement became very clear in the context of something very simple. How do we analyze the phonology of a language in which an automatic rule/process exists word-finally? Consider a dialect of Spanish in which word-final s is aspirated (in which s is aspirated in both mas bajo and mas alto) but in which s before vowel word-internally does not aspirate (basura). For Bloomfield–Hockett, s and h are in contrast, and we have two phonemes. For Sapir, there is just one. (Newman’s controversy over Zuni.)
   (b) The American school was well aware of issues in English phonology, such as the treatment of night-rate versus nitrate, and catch it versus cat shit.

3. Separation of levels: using morphological information in building the phoneme inventory

**Topic 3: Zellig Harris’s goal in Methods**

These procedures are not a plan for obtaining data or for field work. In using them, it does not matter if the
linguist obtains the data by taking texts, questioning an informant, or recording a conversation....These procedures also do not constitute a necessary laboratory schedule in the sense that each procedure should be completed before the next is entered upon....The chief usefulness of the procedures listed below is therefore as a reminder in the course of the original research, and as a form for checking or presenting results... The particular way of arranging the facts about a language which is offered here will undoubtedly prove more convenient for some languages than for others. However, it should not have the undesirable effect of forcing all languages to fit a single Procrustean bed, and of hiding their differences by imposing on all of them a like a single set of logical categories. Methods: 1-2

**Topic 4: Completely wrong (Pieter Seuren)**

The book is thus a massive discovery procedure, ideally based on a large corpus of sound recordings, for a maximally compact statement of all possible constructions in a language at the different ascending levels of phonemes, morphemes, words, phrases and, finally, the sentence. The aim is to establish an axiomatised discovery procedure for the simplest possible grammar or grammars of a language. p. 152...Other than in Pike’s tagmemics, which led to hundreds of actually written and published grammars, Harris’s method did not lure any linguists into the activity of grammar-writing. The reason is obvious: what linguist will condemn himself or herself to such drudgery! Harris, of course, realised that. For him, the method of grammar-discovery he set out in his book was more an intellectual exercise than a practical proposal. Seuren, Prestructuralist and structuralist approaches to syntax, p. 153.

**Topic 5: Harris: Find methods of analysis**

Harris’s key throughout his work was the search for methods of analysis which would lead to compact descriptions:

The preceding chapters have indicated a number of operations which can be carried out successively on the crude data of the flow of speech, yielding results which lead up to a compact statement of what utterances occur in the corpus. [361]

The final resultant classes for the corpus, i.e., the most inclusive position classes, serve as the elements for a compact statement of the structure of utterances. [363]

**Compact statements** as to what utterances occur in the corpus can now be made either in terms of the final resultants of chapter 16 or in terms of the class relations of chapters 16-18(19). [364]

Each stretch of speech in the corpus is now completely and compactly identifiable in terms of the elements at any one of the levels. [364]

The over-all purpose of work in descriptive linguistics is to obtain a compact one-one representation of the stock of utterances in the corpus. [366-7]

[Our analysis] derives not from the nature of the comparisons but from our purposes: if we want compact statements about the combinations of parts in the language, we prefer to set up as elements those segments or classes which enter into the same combinations as do other segments or classes. [368-9]

The classifications and other operations are always based on relevant (distributional) relations the expression of which leads to a simplification at some point in the final statement. [372]

In some cases there is in general no advantage to identifying morphemes as composed of morphophonemes instead of phonemes...[in some cases] no economy would be gained in replacing the alternation of members in the morpheme by an alternation of segments in the morphophoneme. [238]

We seek to reduce the number of elements, in preparation for a compact statement of the composition of utterances. [243]
Topic 6: There is no unique method to determine the phonemes

It should be clear that while the method of 7.3 is essential to what are called phonemes, the criteria of 7.4 are not essential ‘rules’ for phonemicization, nor do they determine what a phoneme is. At a time when phonemic operations were less frequently and less explicitly carried out, there was discussion as to what had to be done in order to arrive at ‘the phonemes’ and how one could discover ‘the phonemes’ of a language. Today we can say that any grouping of complementary segments may be called phonemic. … The linguistic requirement is not that a particular arrangement be presented, but that the criteria which determine the arrangement be explicit. The reader will see what we mean by reference to subsections 7.3, 7.4, and so on. p. 72

Topic 7

The linguist does not impose any absolute scale upon a language, so as to set up as elements, for example, the shortest sounds, or the most frequent sounds, or those having particular articulatory or acoustic properties. Rather...he sets up a group of elements (each by comparison with the others) in such a way as will enable him most simply to associate each bit of talking with some construction composed of his elements. pp. 7-8

All that matters is that the defining of the elements and the stating of the relations among them be based on distribution, and be unambiguous, consistent, and subject to check. Beyond this point, it is a matter of other than descriptive purposes how compact and convenient the formulation is, or what other qualities it may have… It therefore does not matter for basic descriptive method whether the system for a particular language is so devised as to have the least number of segments (e.g., phonemes), or the least number for statements about them, or the greatest over-all compactness, etc. These different formulations differ not linguistically but logically. They differ not in validity but in their usefulness for one purpose or another (e.g. for teaching the language, for describing its structure, for comparing it with genetically related languages). Page 9.

Topic 8: Harris made it clear that the linguist was formulating hypotheses as he goes along

The practice of linguists is usually a combination of methods. The linguist makes a first approximation by setting up tentative morphemes. He then uses his phonologic investigation to verify his postulated morphemes. In some cases where he has the choice of two ways of assigning phonemic elements, he chooses the way that will fit his guess. p. 24.

Topic 9: From Randy Harris, The Linguistic Wars

Bloomfieldian theory, as Chomsky saw it, was concerned with locating a discovery procedure for grammars—a set of principles that could be turned on a corpus of texts and produce a grammatical description of that corpus, a grammar… There is some question as to whether the way Chomsky saw Bloomfieldian theory on this count, chasing discovery procedures, is the way Bloomfieldian theorists saw themselves. Certainly it is easy to read Harris’s Methods, for instance, as pursuing such a goal; ideally, one points the mechanical routines in the book at a sufficiently large corpus from some language and it cranks out a description of that corpus (and, by extension, of that language).
Topic 10: Swahili phonology

- Phonetic *kitàbu* was analyzed phonemically as *kitabu#*.
- *walikujàwanàwàkèwàfìli* can be *analyzed* as *walikujà#wanawàki#wàwìlì#*
- —which in fact is how this sentence would be written in Swahili, though with spaces rather than the symbol #.
- where *walikujà* means ‘they came’; *wanawàke* means ‘women’; and *wàwìlì* means ‘two’.

For the traditional phonemicist, Harris’s suggestion was somewhere on that short path that lies between heresy and stupidity. It looked like Harris was using what he knew was knowledge of where the words began and ended in order to change the phonological analysis. Harris’s response to this was that there was nothing in the theory that forbade him from proposing this analysis—phonemes were part of an *analysis*, they were not there in the observed data—and in any event, by positing this new phoneme, he could make some empirical predictions, like where a speaker might pause during an utterance.
The view is sometimes expressed by modern grammarians to the effect that the medieval grammarians neglected the study of syntax, or that they had only a vague idea of it. This view is entirely incorrect. They did not treat of syntax as an independent category, but there is a considerable wealth of syntactical observations scattered through the works of these grammarians. These observations attest their interest in these problems, as well as a keen insight and sound judgment in this branch of research. p. 298.

Specialists have been working for a long time on the problem of analyzing, describing, and comparing grammatical systems, and the degree of accuracy is much greater than the layman would suspect. At the same time, there remain many points on which precision is still impossible. Some linguists like to believe that grammatical analysis has become a completely objective operation, but this is not true. Phonemic analysis has been brought much nearer such a state... But grammatical analysis is still, to a surprising extent, an art: the best and clearest descriptions of languages are achieved not by investigators who follow some rigid set of rules, but by those who through some accident of life-history have developed a flair for it.

1. First generation (of two): Edward Sapir and Leonard Bloomfield
2. Second generation: Zellig Harris and Charles Hockett
3. What they agreed on, what they disagreed on
4. Fred Householder: God’s truth linguistics versus hocus-pocus linguistics

In 1980, in a widely read and influential book sketching the history of linguistic theory in America, Frederick Newmeyer took what Hockett had called a strange and puzzling opinion^1 and turned it into a historical fact: (Linguistic Theory in America, 1980: 8f.)

Despite the work of [Zellig] Harris and a few others, there was relatively little syntax done by structuralists. Robert Hall (1951) explained why: “Descriptive syntactic studies have also been rather rare; but since they normally come at the end of one’s analysis, the tendency is perhaps to hold them for incorporation into a more complete description.” In fact, the little syntactic work which *was* done was, in a sense, the result of “cheating”—a complete morphemic analysis had never been worked out even for English.

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^1Hockett had begun to get annoyed about this, as early as 1968, when he wrote:^2

[A] new crop of strange opinions had sprung up. One of the most puzzling of these was the completely arrogant notion that nobody had ever done any syntax. The historical germ of this one may have been the fact that very little had been published on the syntax of American Indian languages, with which so many of us had served our apprenticeships. But in the face of vast quantities of excellent data on Latin, Greek, and Sanskrit, to say nothing of Bloomfield’s *Tagalog* (1917) and other isolated shorter treatments, I guess we must really have meant that nobody had ever done any syntax right. I do not remember clearly just what we thought doing it right would involve, except for the common notion that to do it right one would have to abjure all reference to meaning. Of course, these opinions were not shared by everyone. But they were in the air, and some of us breathed pretty deeply.
5: What Robert Hall wrote

The statement by Robert A. Hall, that Newmeyer cited? Why would Hall have written that there was little work in syntax during the structuralist period, when it was manifestly untrue?

It turns out he didn’t, and that Newmeyer took Hall’s comment out of context, and in so doing changed the sense completely of what Hall intended. Hall begins his discussion this way:

> From phonemics, once a basic method of analytic procedure was attained, the focal point of attention has passed to morphology and syntax—partly as a result of normal development in scientific procedure, and partly under pressure of war circumstance.

And then immediately after the words that Newmeyer quoted, Hall cited three important papers (by Charles Hockett, Leonard Bloomfield, and Bernard Bloch) on descriptive syntactic studies. But more importantly, Hall went on to describe the developments in “theoretical matters” in morphemic and syntactic analysis, and under this rubric he includes not only seven chapters of Bloomfield’s *Language*, but the classic papers:

1. Kenneth Pike’s “Taxemes and immediate constituents” (*Language* 1943)
2. Rulon Well’s “Immediate constituents”
5. Pittman’s “Nuclear structures in linguistics” (*Language* 1948)
6. and others.

And we must not lose sight of the fact that Hall’s overview stopped at the year 1950, when the work on syntax was heating up!

6: Zellig Harris’s 1951 framework: *Methods in Structural Linguistics*

1. Why has this model been mischaracterized?
2. Basic principles

7: Rulon Wells 1947

We do not propose our account as a mechanical procedure by which the linguist, starting with no other data than the corpus of all the utterances of the language and a knowledge of the morphemes contained in each one, may discover the correct IC [*immediate constituent*]-system. For any language, the number of possible IC-systems is very large; but in practice it is easy to see that most of the possibilities are negligible…Because of the systematic interlocking of one IC-analysis with others, both of the same sentence and of other sentences of the language, it is not possible to demonstrate conclusively upon one or a few selected examples that, all things considered, such-and-such analyses are the best. All we can do is to delineate the proof and to show how far-reaching the consequences of any one particular IC-analysis may be.[93]

> Given two different accounts of a language, the best that a linguist should aim to do is to have in his toolbag a method for deciding which of the two is better. That will always be good enough. In Wells’ words:

> [A]n IC-analysis is never accepted or rejected on its own merits. Our procedure aims only to tell, given two or more mechanically possible dichotomies…how to decide in favor of one of them…as far as possible on formal grounds alone. [p. xx] …an analysis is not pronounced good or bad of itself, but only better or worse than some other…We call an IC-analysis wrong when there is another possible analysis of the same sequence that is better, and right when there is none. [88]

8: Rulon Wells 1947 part 2

*Why was it so important to think about discovering syntactic structure in this new way? This is what Wells said—and he was*
absolutely right; and the crucial point lay in his use of the word maximally:

This is the fundamental aim of IC-analysis: to analyze each utterance and each constitute into maximally independent sequences—sequences which, consistently preserving the same meaning, fit in the greatest number of environments and belong to focus-classes with the greatest possible variety of content.[88]

It is only by comparing different analyses that we can be sure that we have maximized this characteristic.

It is easy to define a focus-class embracing a large variety of sequence-classes but characterized by only a few environments; it is also easy to define one characterized by a great many environments in which all its members occur, but on the other hand poor in the number of diverse sequence-classes that it embraces. What is difficult, but far more important than either of the easy tasks, is to define focus-classes rich both in the number of environments characterizing them and at the same time in the diversity of sequence-classes that they embrace. p. 87.

9: Derivational analysis

1. Bloomfield’s Language and “Menomini morphophonemics”
2. Zellig Harris
3. Rulon Wells
4. Charles Hockett’s “item and process” model

10: Syntax: Harris 1957 “Co-occurrence and transformation in linguistic structure” English auxiliaries 1

His analysis of the English auxiliary is striking, and notable. He begins by pointing out the difference between two sets of sentence:

a  He paints       He will paint
b  He painted
c  He doesn’t paint   He will not paint
d  He does paint     He will paint
e  Did he paint?    Will he paint?
f  Only then did he paint Only then will he paint
g  I painted and so did he I’ll paint and so will he

In the first column, a form of do appears in all but the first two cases, but in the second column, with an auxiliary verb, no do appears. In addition, in the second column we find that cases such as e and f, “the auxiliary changes place with the preceding N,” (300) and that in the first column, he will suggest that the suffix -ed and -ing “move in front of” verb, and the do that appears before them should “be considered not a morpheme but only a phonemic carrier for the suffixes when they do not have their V before them. (The suffixes occur only after a phonemic word, and interchange in position with V leaves them without a phonemic word.)” (300)
He then extended the pattern in the table to include:

- a They paint
- b They painted
- c They don’t paint
- d They do paint
- e Do they paint?
- f Only then do they paint
- g We paint and so do they.

X suggests that these data can be analyzed with the same hypothesis if we assume that there is a phonologically null morpheme which has the same behavior as -s and -ing, and he goes on to say that all three of those morphemes are in the same class with the auxiliary verbs could, should, etc., a class that he calls v, distinct from the class V for verbs. This “little v” class has the properties:

1. Every verb V has a v.
2. There may be restrictions linking the v with a D or PN in the sentence.
3. The distribution of following words matches the distribution of the verb V.

12: Extend analysis to perfective have

He then points out that similar points can be made about the following sentences:

- a He is painting
- b He has painted
- c He has been painting

And from these he concludes that the simplest account is to say that have ()en and be ()ing may occur between the v and the V, and the “()” in the formula is intended to be the position where the following V (“including have and be”) occur. This analysis can be summarized as follows:

- He paints v V
- He can paint v V
- is painting v + be ()ing + V
- may be painting v + be ()ing + V
- has painted v + have ()en + V
- had painted v + have ()en + V
- will have painted v + have ()en + V
- has been painting v + have -en + be -ing + V
- could have been painting v + have + -en + be -ing + V

“These constructions,” he added, “may be viewed as expansions of v, constituting v-phrases of which the v proper is the head.” In a footnote, he noted that the passive be + en is part of this larger construction, though additional changes in the sentence are involved in the passive.

13: Further discussion

Later discussion of this material, p. 311:

In section 2.5, a class v was set up, including the tenses -ed and zero (without variant -s) and the auxiliaries will, can, etc. In the presence of not, emphatic stress, question intonation, etc., the suffix members of v (the tenses proper) move in front of their V to the position of the other v; they then appear with do as phonemic carrier. In the presence of question intonation and certain prefixed words, all v move in front of their subject N. There is also a v-phrase expansion: have -en and be -ing between the v and the following V.
That woman earns 9000 francs per month.

Paul was hit by Peter.
Figure 0.2: Pike's hierarchical syntactic analysis

Data $\rightarrow$ Abstract linguistic methods $\rightarrow$ immediate constituents of the data

Data $IC_1$ $\rightarrow$ Abstract linguistic methods $\rightarrow$ $IC_1$ is better; or, $IC_2$ is better.

Figure 0.3: Wells's (1947) distinction
Wells did not represent it this way; he wrote this:

the || king ||| of ||||England | open ||| ed || Parliament.

| | | the | | | king | | | of | | England | | | | | opened | | Parliament | |

Figure 0.4: Wells 1947 “Immediate constituents” *Language*

Hockett illustrated this with three similar, short sentences: *She can, she can go, she can go there*; see Figures ??, ??, ??.

Figure 0.5: A fence, a phrase-structure rule, and a tree
Figure 0.6: A fence, a phrase-structure rule, and a tree

Figure 0.7: A fence, a phrase-structure rule, and a tree

Figure 0.8: A fence, a phrase-structure rule, and a tree
The sons and daughters of a man are his children

Figure 0.9: Hockett’s fence-style representation
8
9
11
ren
child
is
h
are
9
10
11

Figure 0.10: Arboreal structure

Figure 0.11: This is a caption

Figure 0.12: Old men-and-women
Figure 0.13: Discontinuous constituent: Is John going with you?

Figure 0.14: Surface and deep grammar disagreeing
Figure 0.15: Noam Chomsky
**Topic 1: The role of the evaluation metric: a new notion of explanation**

1. The question was set by Nelson Goodman and David Hume: the problem of induction
2. The problem of induction: how do we proceed from a finite amount of data to a generalization?
3. That is the problem of linguistics as a scientific theory
4. How can we devise a system that chooses grammars, given a finite set of data
5. Hypothesis selection is based on two considerations: simplicity of hypothesis, and the degree to which the data supports the hypothesis.
6. Can such a notion of support be worked out? Is it inconsistent with a Popperian view of science?
7. This is not an approach founded on psychological reality, whatever that might mean

**Topic 2: Chomsky recalls the 1950s, in the 1960s**

I worked for quite a few years trying to carry out a behaviourist programme. As a student, I was very much convinced that it would be possible to construct simple inductive principles that would explain how language is acquired. I thought that there should be simple inductive principles which would lead directly from a corpus of data to the organization of that data and that such an organization is what language would, in fact, consist of. But at the same time I was also, on the side, trying to write generative grammars. I assumed that generative grammars were just for fun and my own private hobby. I thought the attempt to build up analytic procedures was the real stuff. It was only much later, a long time later, maybe four years of really hard work, that I finally managed to convince myself that the attempt to build up analytic procedures was nonsense and that generative grammar was the real thing.

*How did you get interested in generative grammar?*

It had been around a long time. As I understand Humboldt, for instance, he had a concept similar to generative grammar. In any event, whether Humboldt did or did not, one thing at least is clear. If he did have a concept of generative grammar he could not do anything with it, because he did not have the techniques for using it. There was no way to take his insights and turn them into a rich, explanatory theory. That required new notions which eventually grew out of work on the foundations of mathematics. The notion of recursive systems of rules, for example. This work only came to fruition in the 1930’s. But by then most people had completely forgotten about Humboldt and his kind of insights. I happened to be very lucky since I began to study the foundations of mathematics, not thinking it had any bearing on linguistics. Of course, it turned out to be just what was needed. I think the ideal situation would have been to have someone in 1940 who was steeped in rationalist and romantic literary and aesthetic theory and also happened to know modern mathematics. Such a person would have seen very quickly what to do. As far as I was concerned, it was pure accident. It just happened I grew up having some knowledge of historical linguistics largely because my father, who was a Hebrew scholar, was working on medieval grammatical texts and the history of the language. In historical linguistics it is taken for granted that there are underlying processes and that you can explain things by looking at how these processes interrelate. Of course, this is usually done in a very atomistic fashion and there is not much theory or system to it, but at least the concept of explanation is there. And then, as I said, I had also done some work in modern mathematics and logic, so I was able to combine these two interests. At first, I thought it was just a hobby. It took years and years before any of it was published. Even after I was convinced myself, I still could not get it published. Very few people saw any value in this work. [Interview in *New Left Review* 1/57, September-October 1969.]

**Topic 3: Generative phonology**

1. Who needs phonemes when we have morphophonemes? Not us!
2. The existence of natural classes suggests that induction is based on feature-counting
3. Phonemics and phonology, phonemics and morphophonology; and phonetics?

**Topic 4: Generative syntax**

1. Phrase structure as an alternative to immediate constituent analysis
2. Transformations, from Zellig Harris
3. English verbal auxiliary system