Battle in the Mind Fields 2021: Rupture and continuity in the mind sciences

John Goldsmith

This is a proposal for a 4-week course at the 2021 Institute, entitled *Battle in the Mind Fields*, taught by John Goldsmith.

1 Course description

Where our ideas have come from, and where we think they have come from—these concerns have a powerful influence on the work that we do, and nowhere is this more true than in the academic fields that we call the mind sciences, which include linguistics, psychology, philosophy, and logic. This course will focus on seven important moments in the developments in these fields, as viewed from the vantage point of a linguist in the 21st century.

The course is based, firstly, on a book, *Battle in the Mind Fields*, written by John Goldsmith and Bernard Laks and published in 2019, but in addition, the course continues into the material of a second volume (which we are currently writing), covering the growth of generative grammar and cognitive science. The course is also based on a course that I gave at the 2019 Institute; that course followed a history from 1800 to 1955, while this 2021 course will bring the history up to the late 1960s.

An important theme throughout the course is the necessity to look at the conceptual development and the individual/social interactions through independent lenses, in order to enable us to see that conceptual continuity can be masked by social forces of interaction, and that an important source of continuity within the mind sciences is the passage of important ideas from one field to another, often with little announcement or fanfare.

This book covers the era from the beginning of historical linguistics in Europe in the early 19th century, through the political turbulence in the 1920s and 1930s that led to World War II and the shift of the center of intellectual mass in the West from Europe to the United States, and the rise of generative grammar in the 1960s, both in syntax and in phonology.

The principal topics covered are:

1. The rise of modern linguistics in the 19th century, and the rise of the university system in Germany during this period. The fall of the authority of the Bible, the rise of nationalism, and the effects of the Darwinian revolution.

2. The rise of a psychologically oriented linguistics with the Neogrammarians, and their relationship to Wundt, his school of psychology, and the other schools of psychology in Germany and the United States.

3. The impact of the work of Franz Brentano, Edmund Husserl, and the rise of Gestalt psychology. The rise of behaviorism in the United States, and the impact of the immigration of the Gestalt psychologists to the United States.

4. The impact of Edward Sapir and Leonard Bloomfield. The work of the Prague School, primarily Trubetzkoy and Roman Jakobson.

5. The cybernetics movement, its origin during World War II with Norbert Wiener and its development seen through the Macy Foundation meetings.

6. American descriptivism as developed by Zellig Harris.

7. The development of generative phonology.

8. The development of the *Aspects* model of generative syntax.

2 Motivation

This course is motivated by the belief that a deep understanding of the development of our field is very important— *even for graduate students working hard to keep up with the latest developments in their field* — for two reasons. First, as graduate education emphasizes the importance of preparing students to contribute to research early in their careers, students' training in the conceptual development and empirical grounding of today's approaches is minimized, and this weakens their ability to understand what aspects of current assumptions are strongly grounded and what are not, and when an apparently new proposal is a reflection of an approach that has been developed in the past, allowing us to understood it in the light that history provides. (I'll discuss many examples of this.) The second reason is perhaps a reflection of the first: it is a nearly universal experience for students in linguistics to undergo a crisis of faith, when everything they have been taught seems artificial and worthless. (Everyone knows this, I think, and few do anything about it.) The kind of intellectual exploration that we offer in *Battle in the Mind Field* aims to show that the brilliant thinkers of the past had the same questions in mind that they were trying to get hold of, and we can learn from how they struggled with the same questions, producing for us what constitutes the intellectual heritage that we share today. The point of the course is not to learn the names and dates of long dead linguists, but rather to understand what the questions were that motivated the development of the concepts that we learn, use, and with luck, improve today.

3 Course outline by meeting

1. The larger picture: How do we trace the evolution of our ideas in modern linguistics, and why is this both important and liberating for the young scholar? A consideration of: the ways in which ideas from one tradition may burrow under the fences, like moles, to reappear in neighboring disciplines without an invitation; the importance of Germany as home to linguistics, psychology, and philosophy in the 19th century; the five generations of linguists that stretched from the beginning of the 19th century to the dominance of the American descriptivist tradition.

2. The rise of comparative linguistics in Western and Central Europe in the 19th century. Its connection with the creation of the nations of Europe, and a search for an ancient cultural homeland in India. The Neogrammarian revolution and the Wundtian turn, both at the University of Leipzig in the 1870s.

3. From philosophy to Gestalt psychology. In philosophy and psychology in the last part of the 19th century, the two great figures were Wilhelm Wundt (who gave us immediate constituents) and Franz Brentano (who, with his students such as Edmund Husserl, gave us mereology, categorial grammar, and phenomenology). Gestalt psychology was the dominant approach to psychology in Central Europe, but it was forced to leave its continent with the rise of Hitler, and the Gestalt psychologists came to the United States, where their impact helped moved the country out of its behavioral moment.

4. Two aspects of American thought in the period 1900-1940:

   - in psychology, reaching from (i) Behaviorism, from John B. Watson and its impact on Leonard Bloomfield to the second and more mellow generation of behaviorists, notably Clark Hull and Edward Tolman, all the way to (ii) non-behaviorist studies of culture, as developed in linguistics by scholars such as Franz Boas and Edward Sapir. How these views became the stepping off points of the development of cognitive science in the 1950s.
   - The agreements and the tensions between the Bloomfield and the Sapir camps of linguistics.

   Trubetzkoy, Jakobson, the Prague Circle, and the brain drain to the United States with the rise of Adolf Hitler. The cultural milieu in the United States as seen by the émigrés. For Jakobson, for

example, it was axiomatic that an educated person had read Kant and Husserl. How could he conduct a conversation with people who did not share that culture?

5. The cybernetics movement: computers, and the embodiment of logic as a way of understanding thought. The movement that led to the modern computer began with concerns about the foundations of mathematics late in the 19th century, which then led to a new formulation of how proofs could be verified in a purely mechanical fashion (Turing, Post). The suggestion was made that a grammar of sentences could be made that was like the proof of a theorem (Reichenbach, Quine, Rosenbloom). The transformation of cybernetics into the first generation of cognitive science (George Miller, Minsky, Papert, Newell, Simon, and so on) in 1956-57.

6. American descriptivism as developed by Zellig Harris and his students, and their disagreements with Charles Hockett over what the goal of the linguist was. Harris continued the tradition of Sapir, whose students justified their abstract analyses on the grounds of the simplicity of the results. Harris emphasized the importance of always being explicit in the decisions made in developing an analysis of a language; he has, quite wrongly, been remembered as proposing that those methodological decisions should be made in advance and that they would be the same across the study of different languages.

7. The development of generative phonology as developed in *The Sound Pattern of English*: how it differed from the work of Bloomfield, Sapir, and Zellig Harris, how it was received, and what its strengths and weaknesses turned out to be.

8. The development of the syntactic model in *Aspects of the Theory of Syntax* (1965), and its reception. The model was perceived differently by two groups of readers, who developed into generative semanticists and interpretive semantics. How did the *Aspects* model fit into the world-view of cognitive science of the 1960s?

I have attached my course outline and slides from the 2019 version of this course at the UC Davis institute.

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

1

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*.

Battle in the Mind Fields: Class 2
The Nineteenth Century

John A Goldsmith

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.[a]
   (c) Four generations of higher education in the United States: colleges, land-grant universities, new universities, Cold War/GI Bill universities

[a] The Decline of the German Mandarins, by Fritz K. Ringer. 1969. More recently: Humboldt and the modern German university: An intellectual history. Johan Östling. 2018. Lund University Press. Translated by Lena Olsson.

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

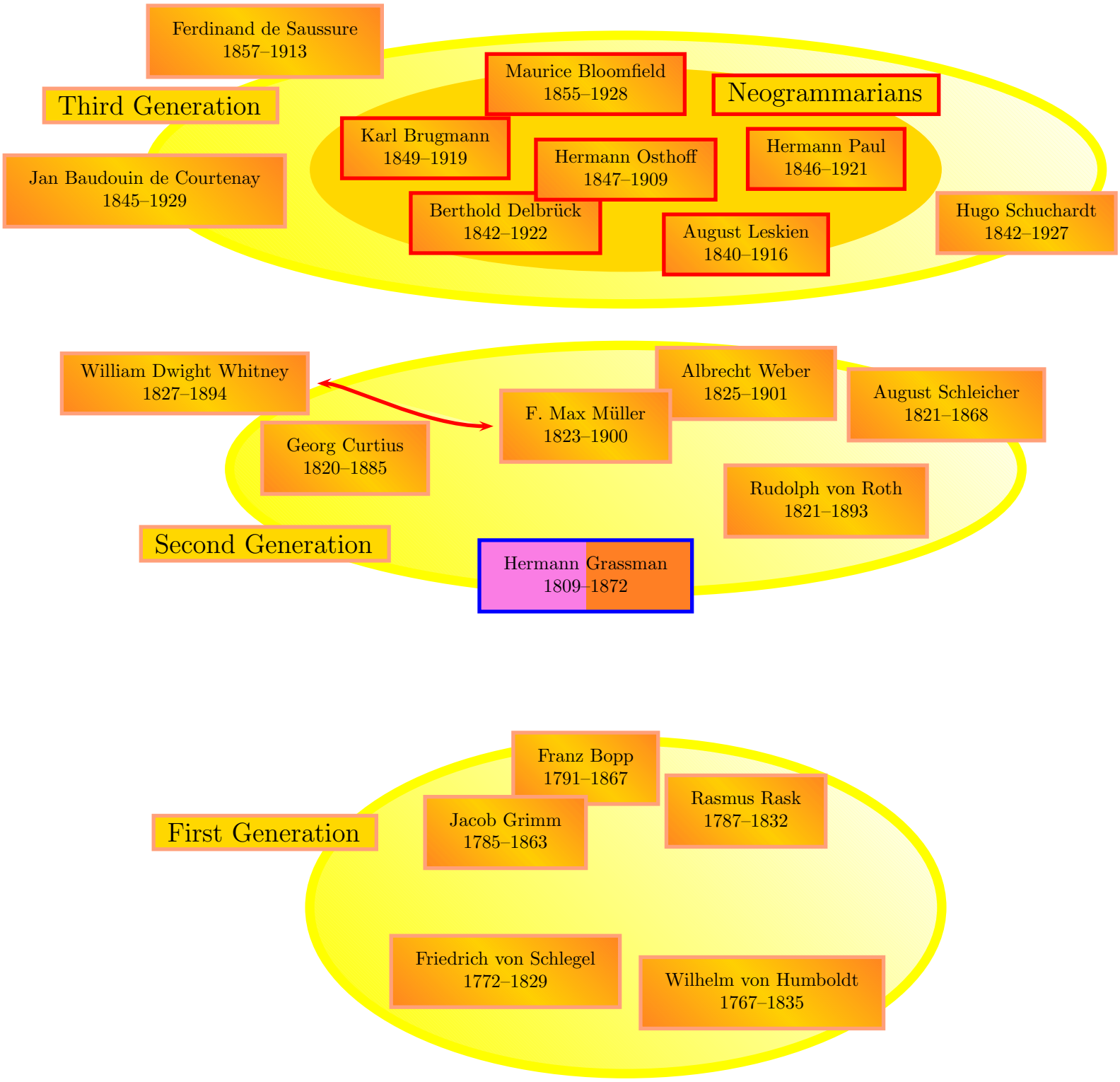


Figure 1: 2.1 First three generations of linguists

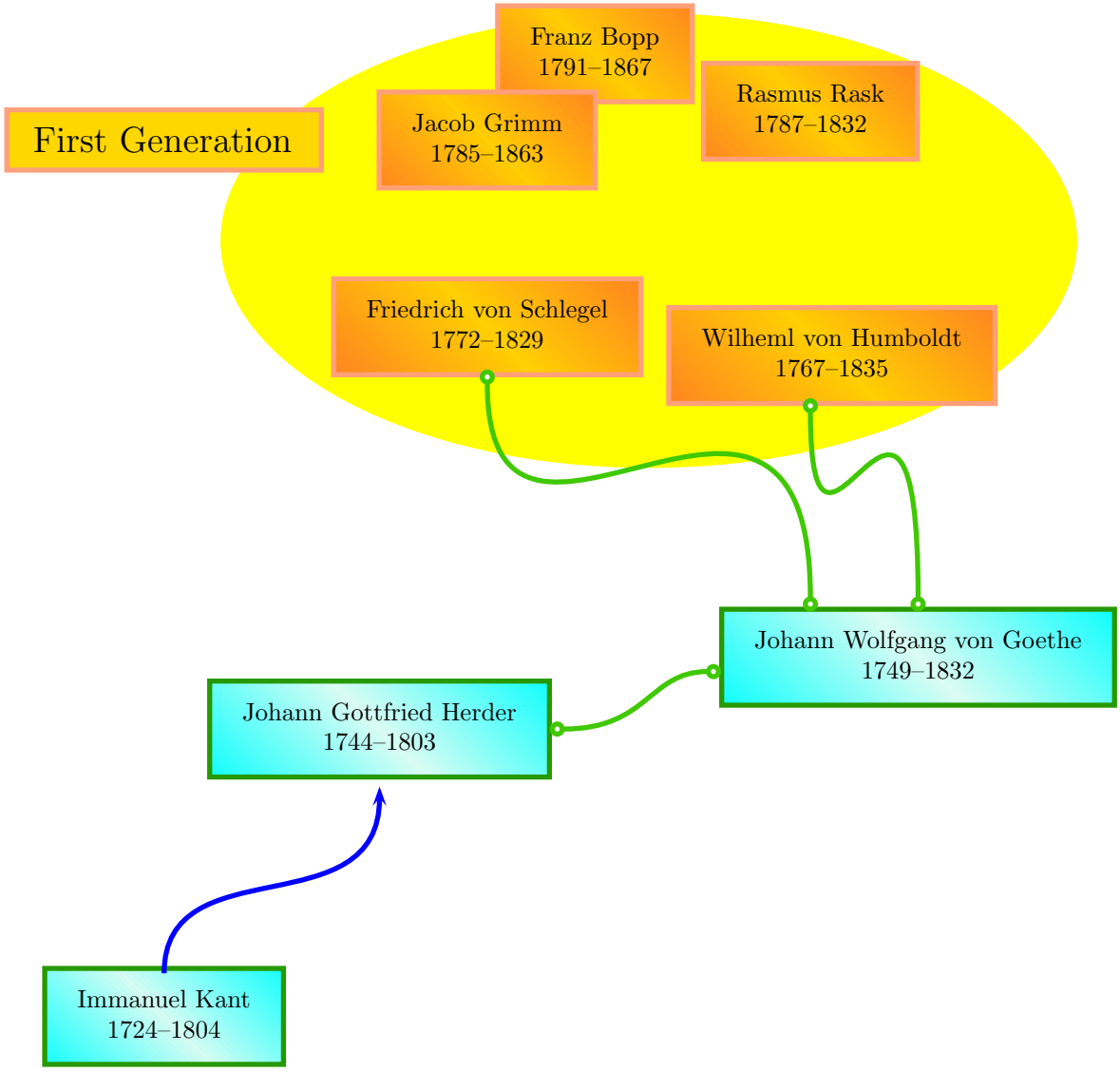


Figure 2: 2.2 First generation of linguists

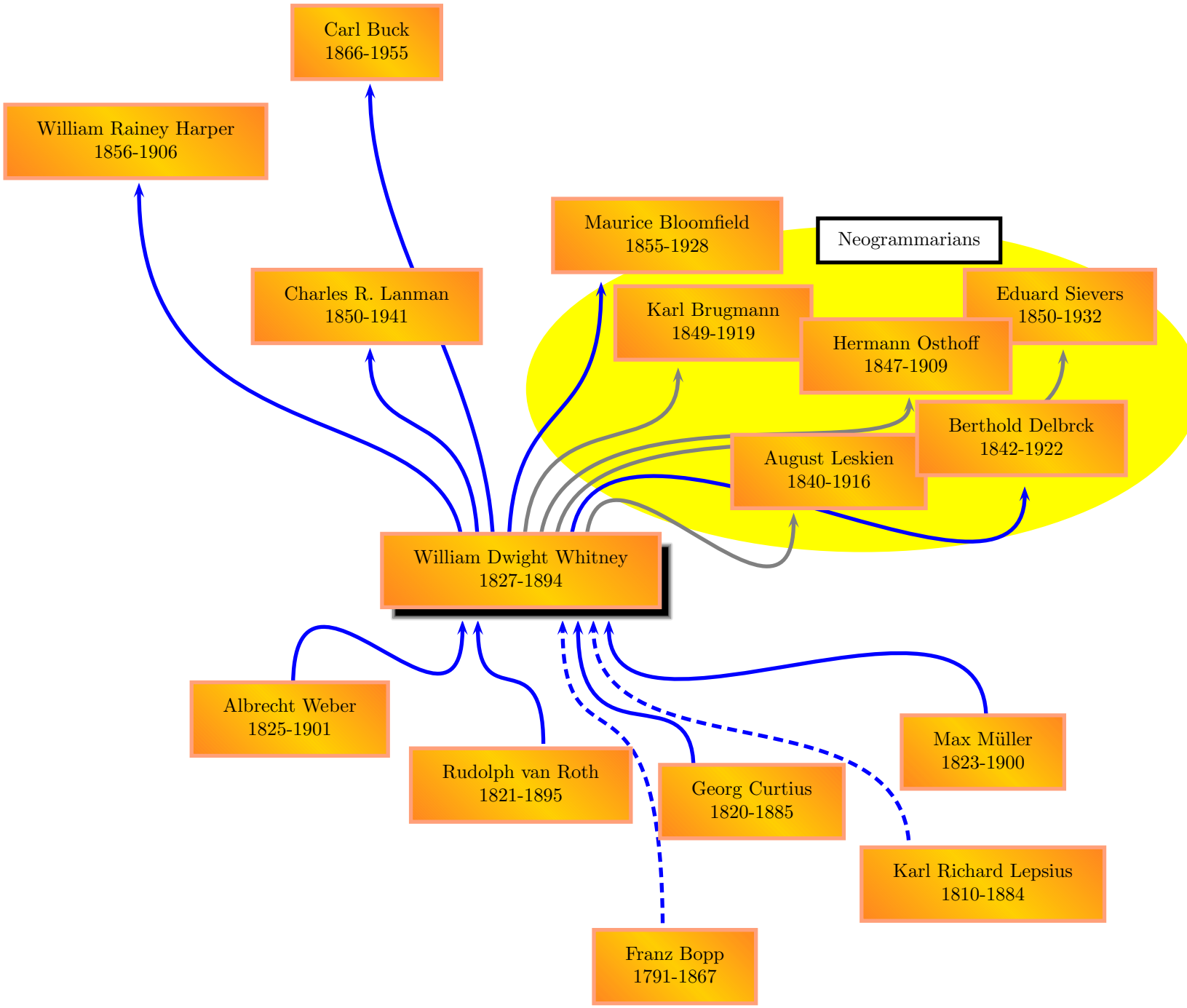


Figure 3: 2.3 William Dwight Whitney

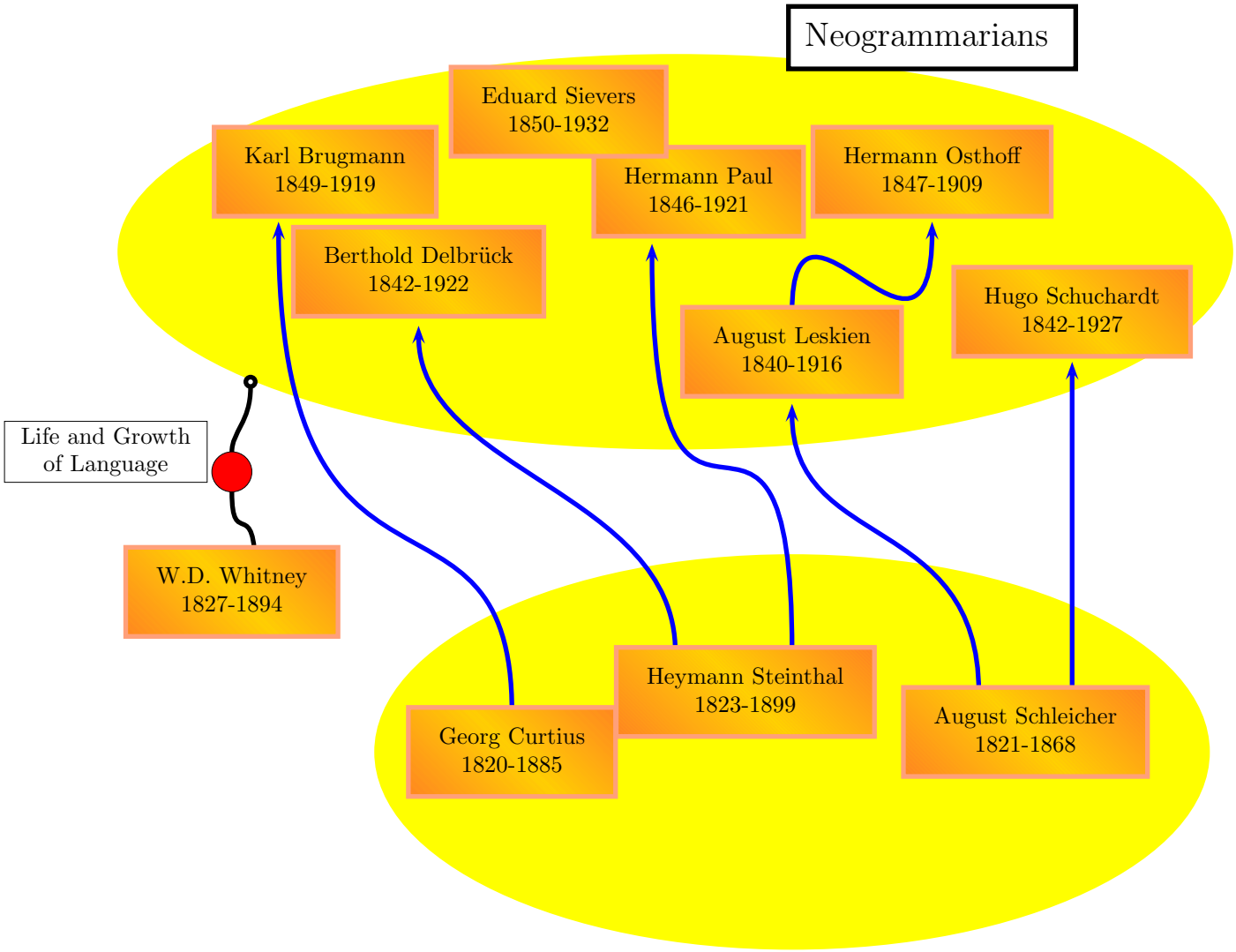


Figure 4: 2.4 Neogrammarians

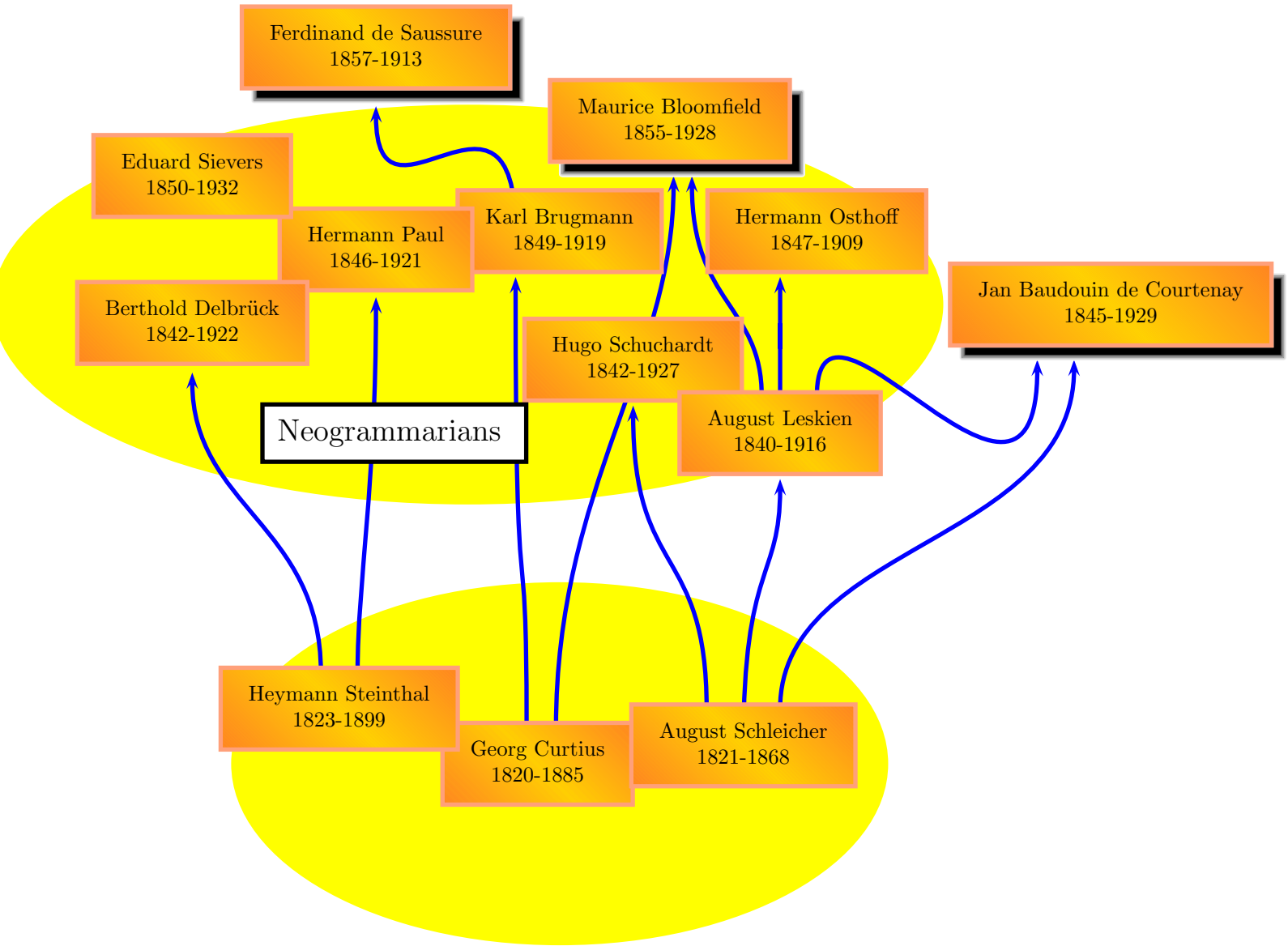


Figure 5: 2.5 Baudouin de Courtenay, Saussure, and M. Bloomfield

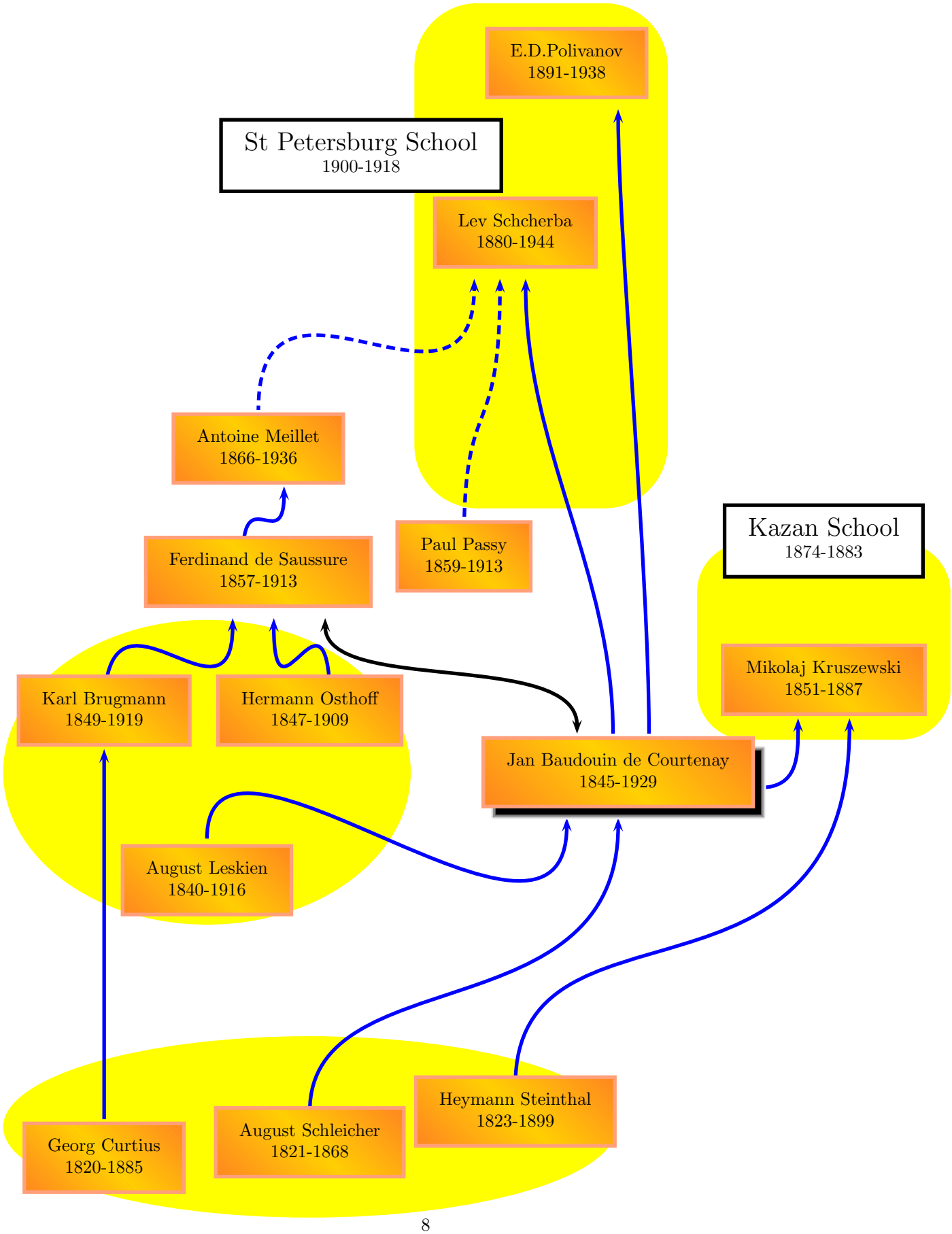


Figure 6: 2.6 Jan Baudouin de Courtenay

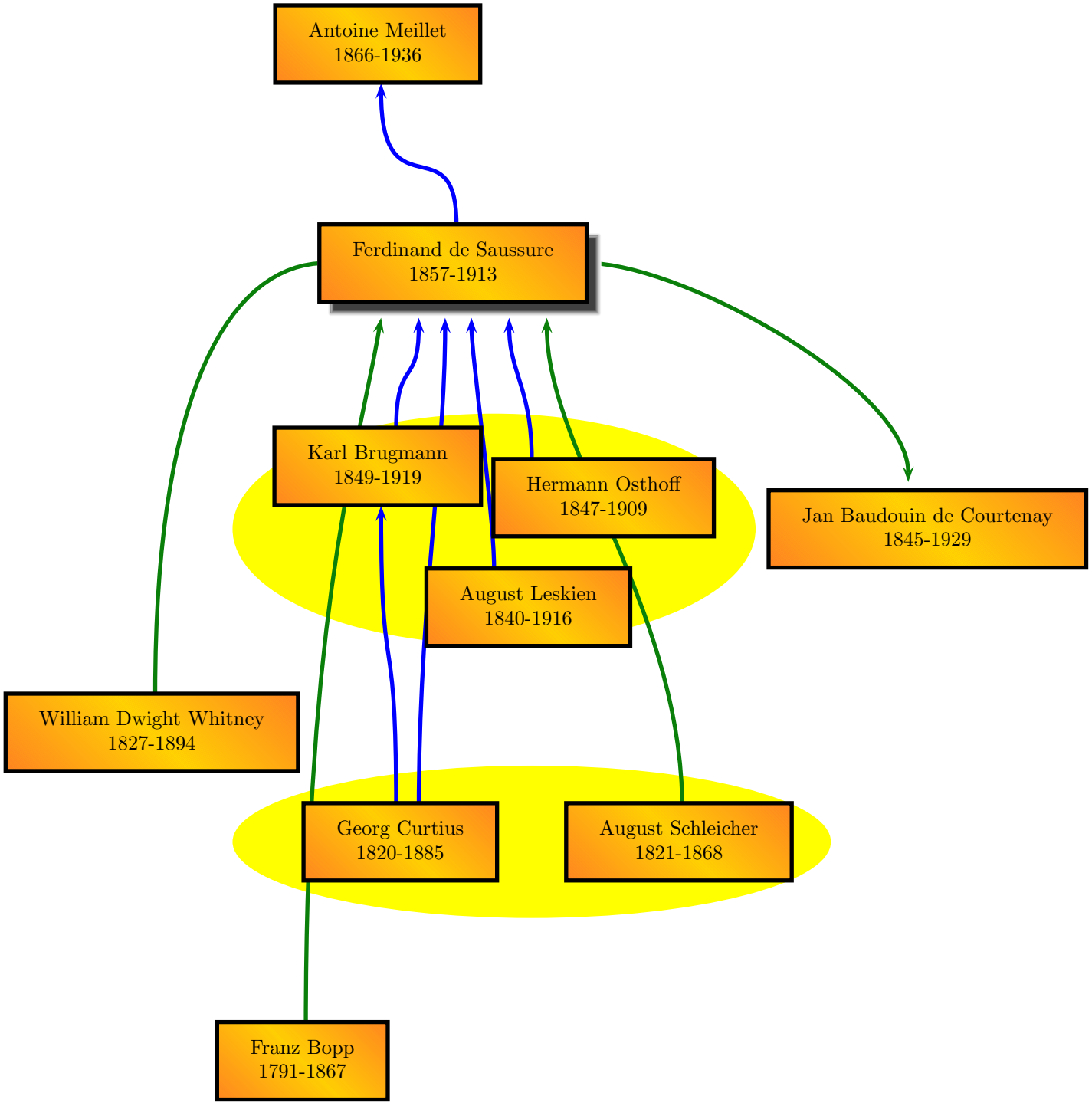


Figure 7: 2.7 Ferdinand de Saussure

Battle in the Mind Fields: Class 3
19th century philosophy

John A Goldsmith

June 21, 2019

Topic 1: What to keep your eye on, in philosophy

1. Ontology or metaphysics: what exists
2. Epistemology: what can be known
3. Method: how we should behave in order to learn and understand

Topic 2: Principal themes

1. Empiricism and Rationalism, both hard and soft
2. Immanuel Kant
3. Auguste Comte and positivism
4. Ernst Mach, philosophy and science
5. (20th century) The Vienna Circle and logical positivism
6. W.V.O. Quine and Nelson Goodman

Topic 3: Two main figures

1. Wilhelm Wundt, in Leipzig (and Leonard Bloomfield the first)
2. Franz Brentano, in Vienna
3. Both were philosophers and psychologists
4. How their students saw them

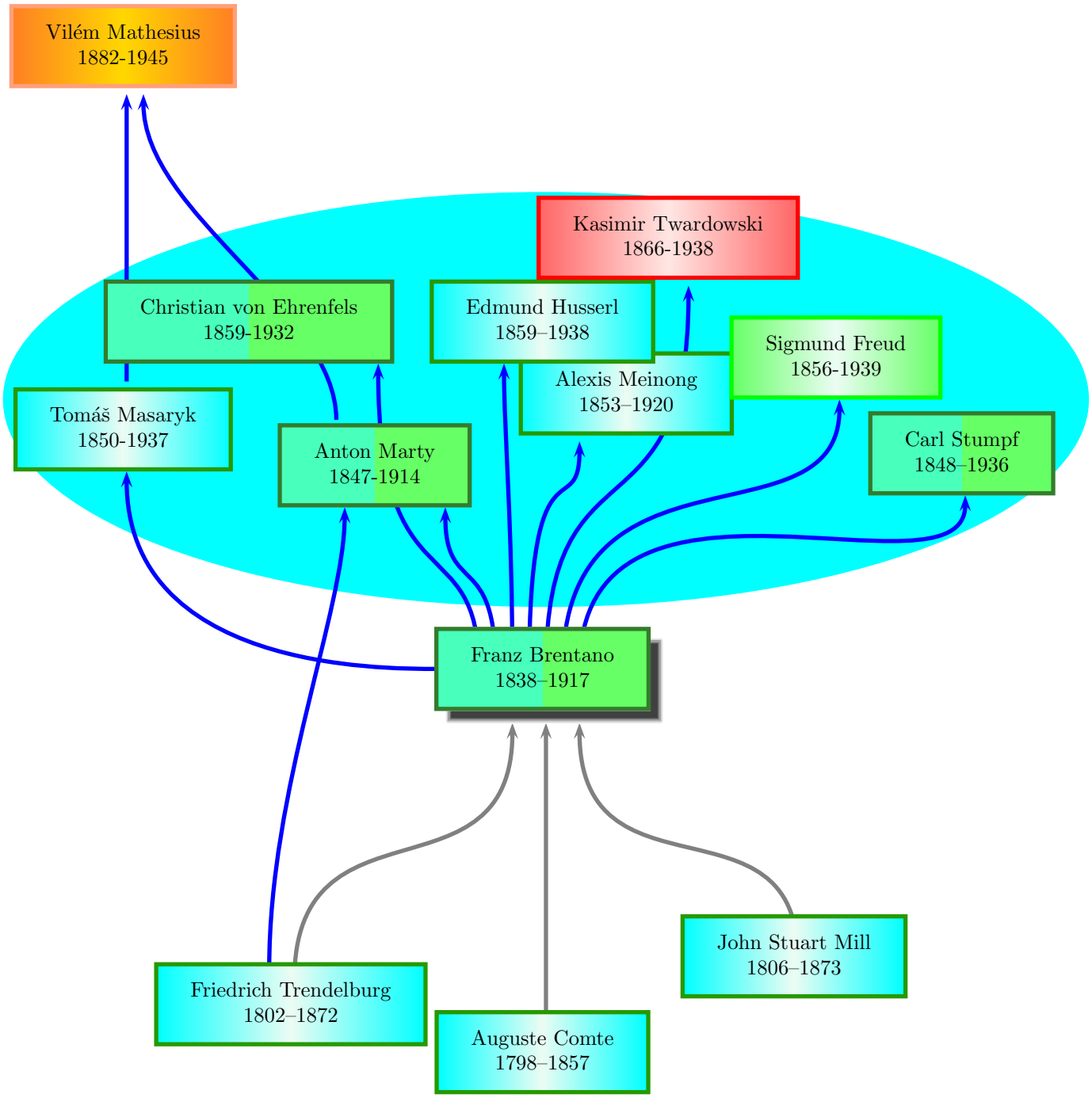


Figure 8: 3.1 Franz Brentano

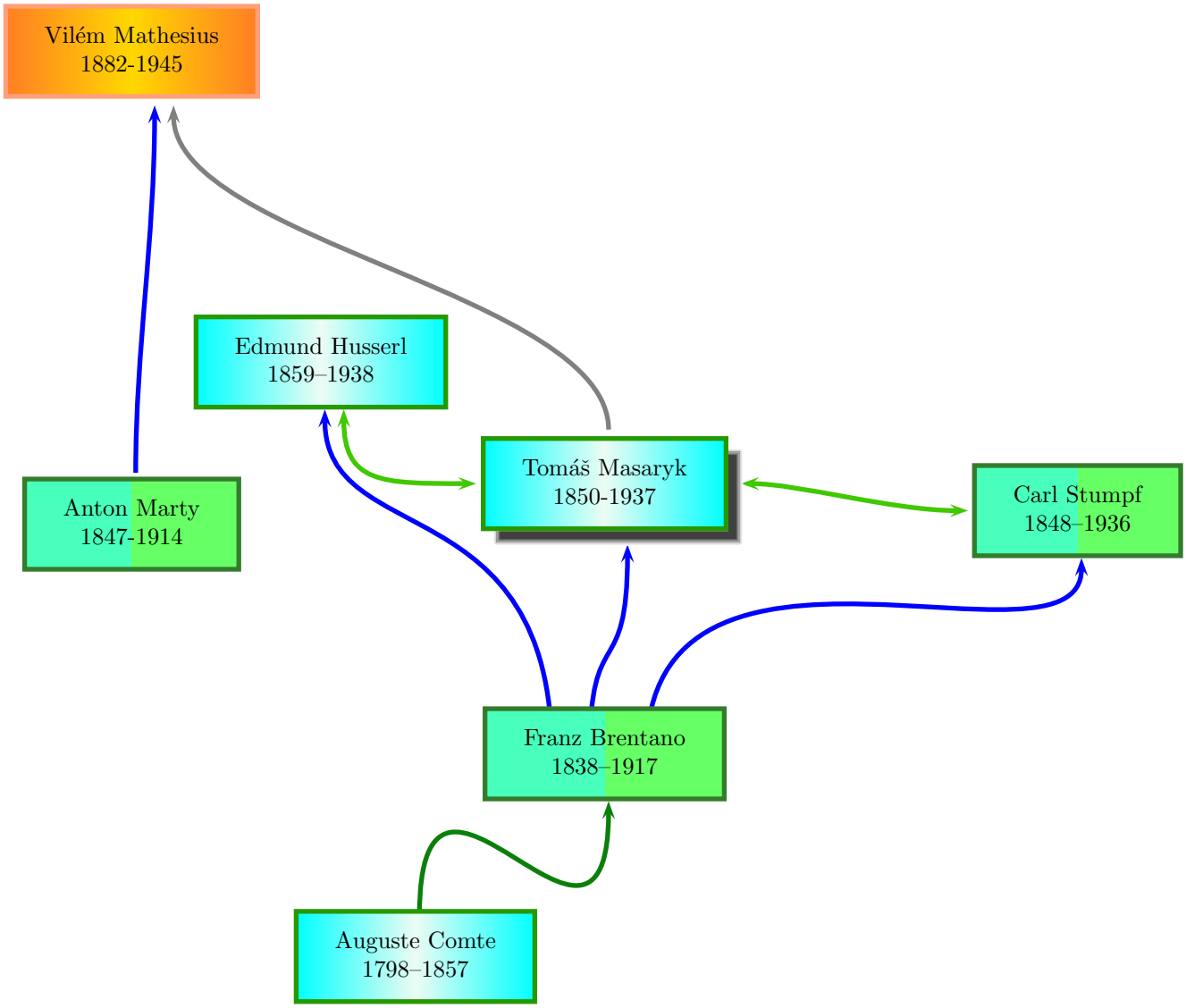


Figure 9: 3.2 Tomas Mazaryk

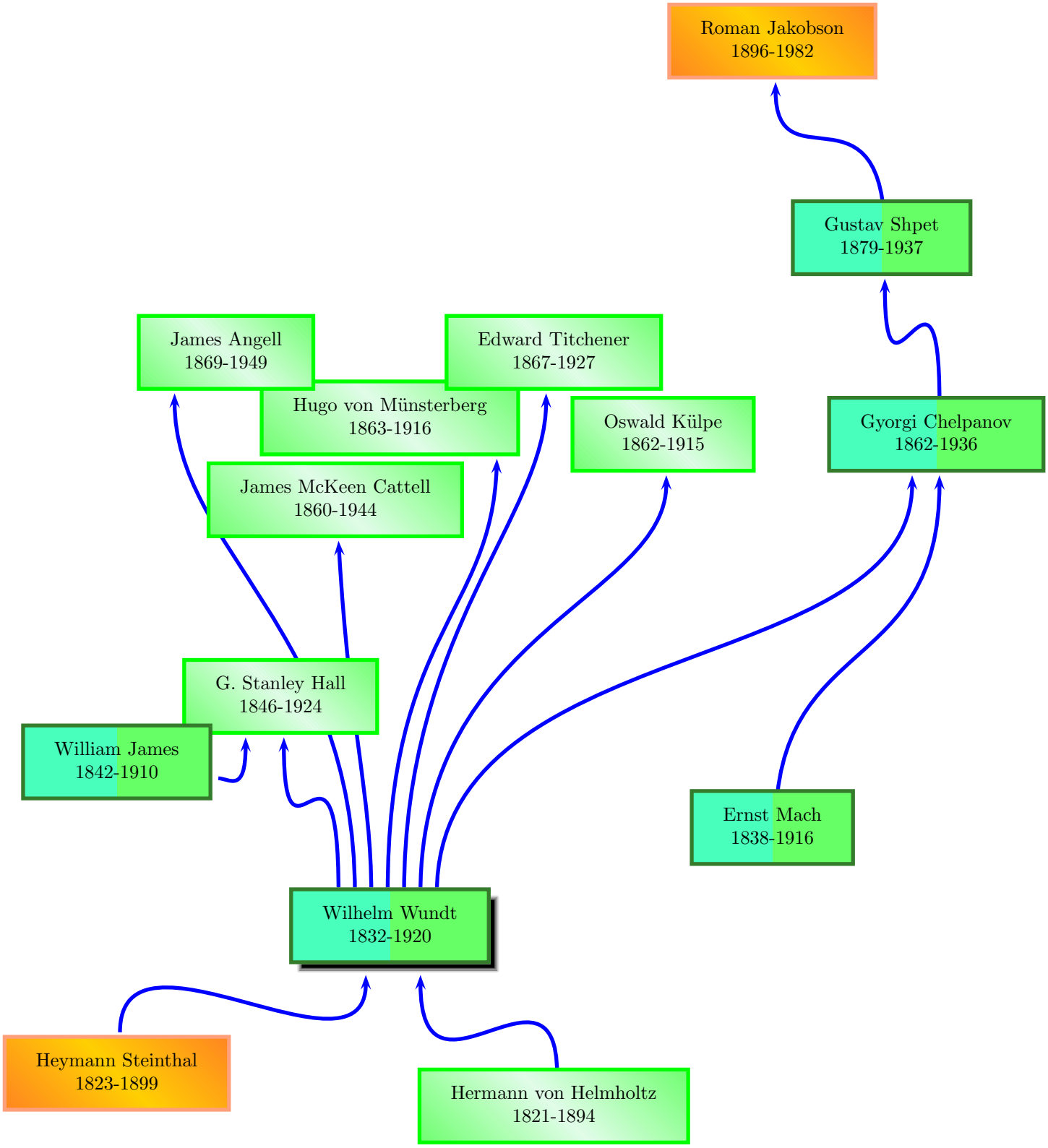


Figure 10: 4.1 Wilhelm Wundt

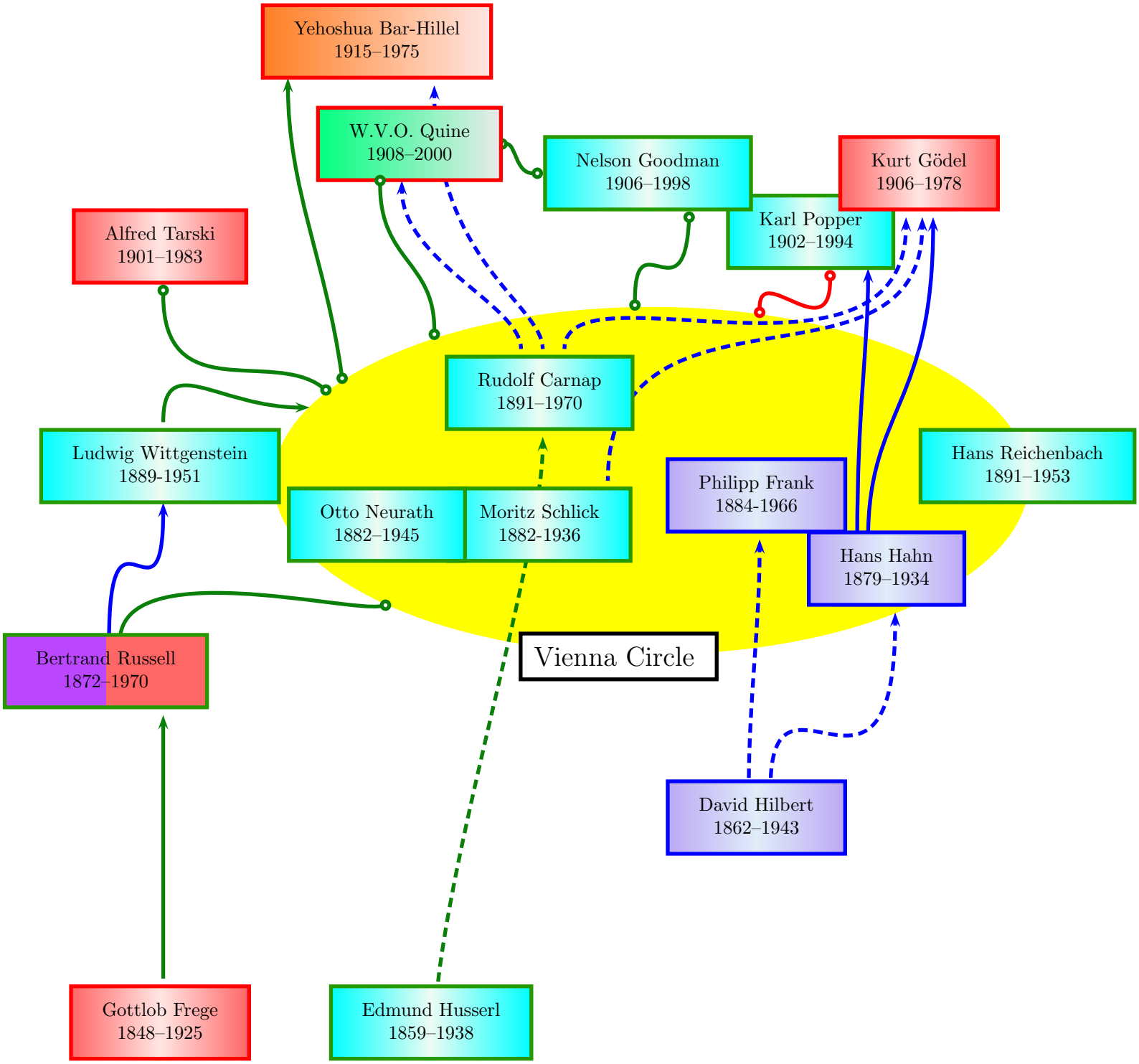


Figure 21: 7.2 Logical positivists and friends

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

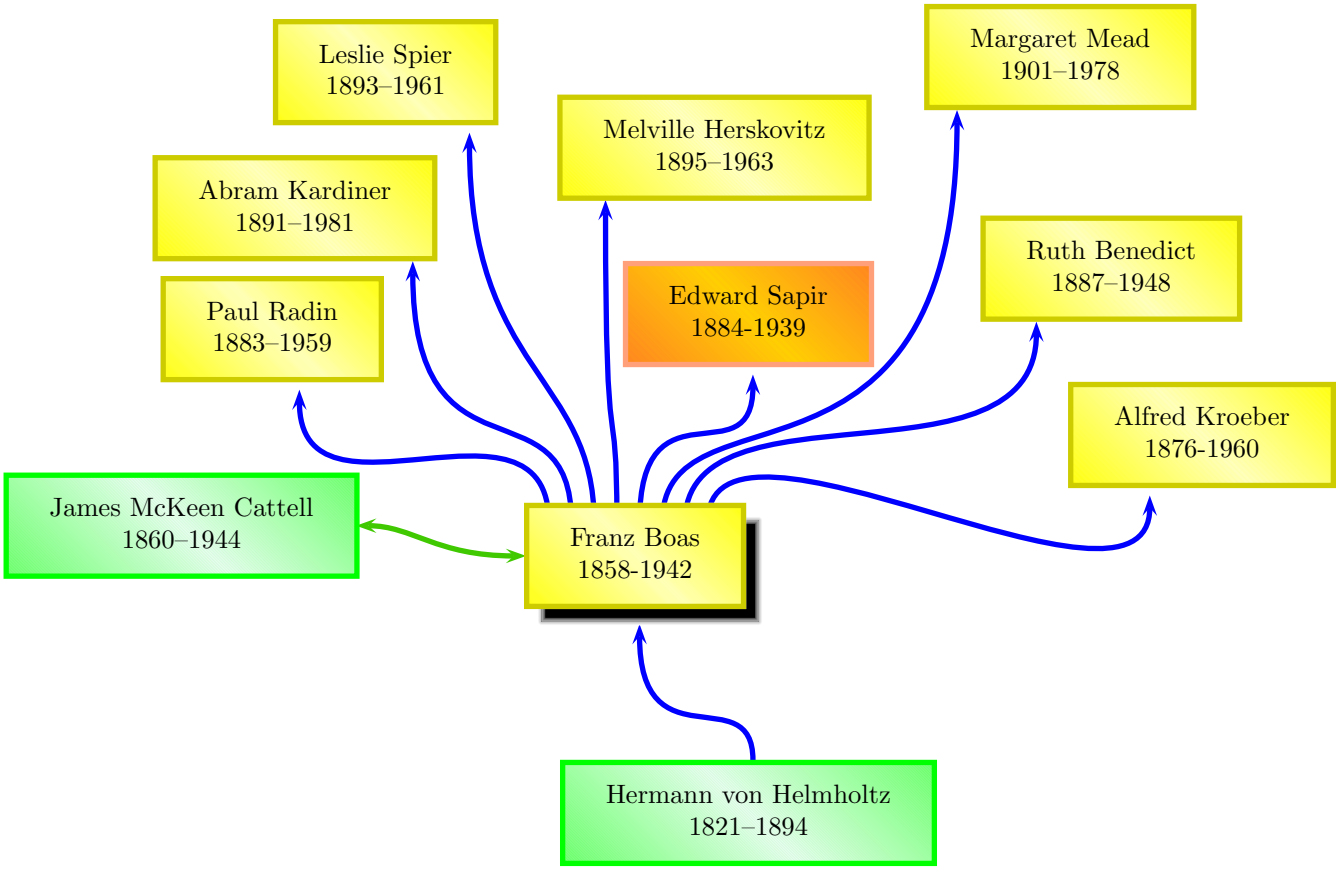


Figure 17: 6.1 Franz Boas

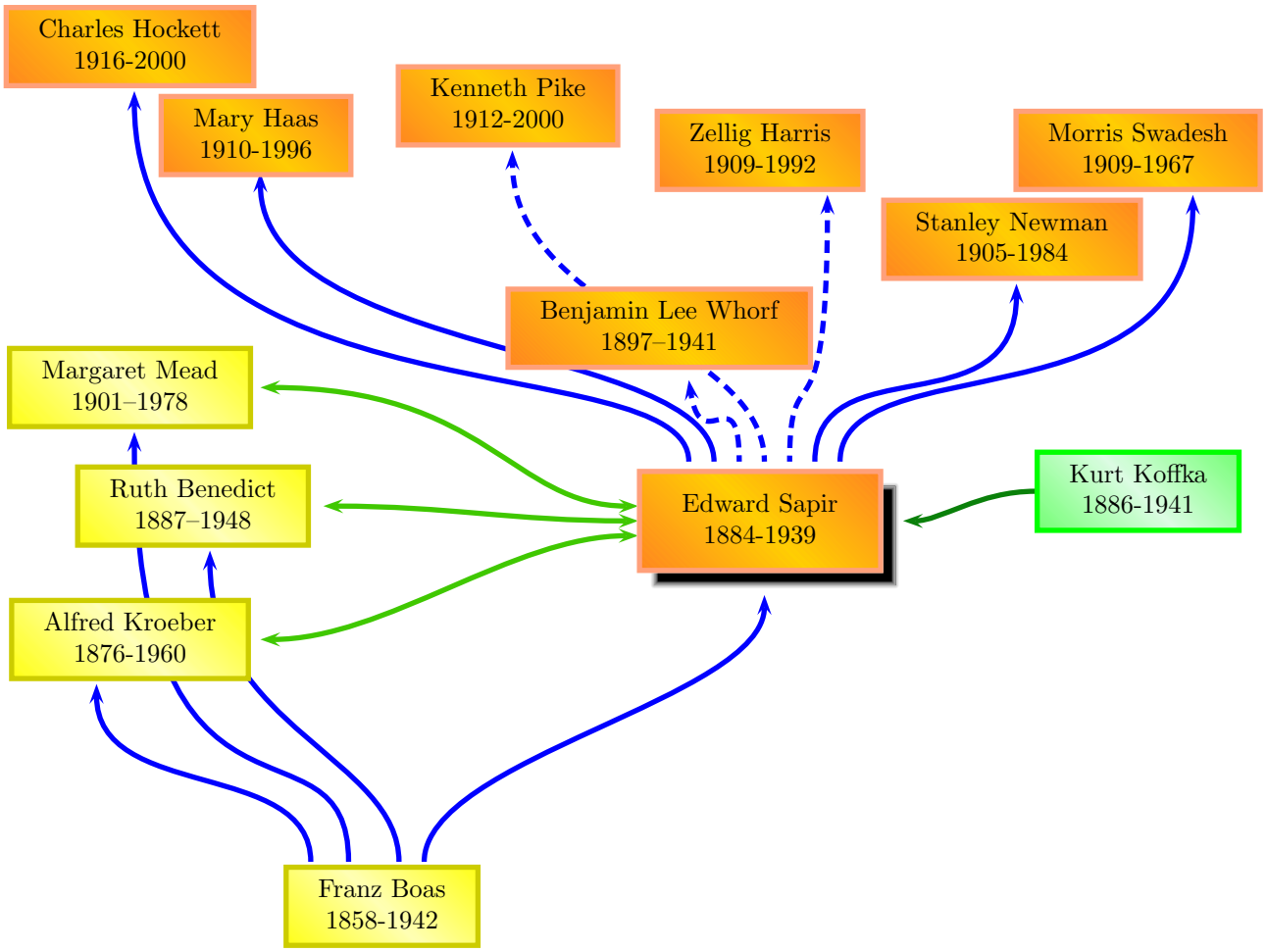


Figure 18: 6.2 Edward Sapir

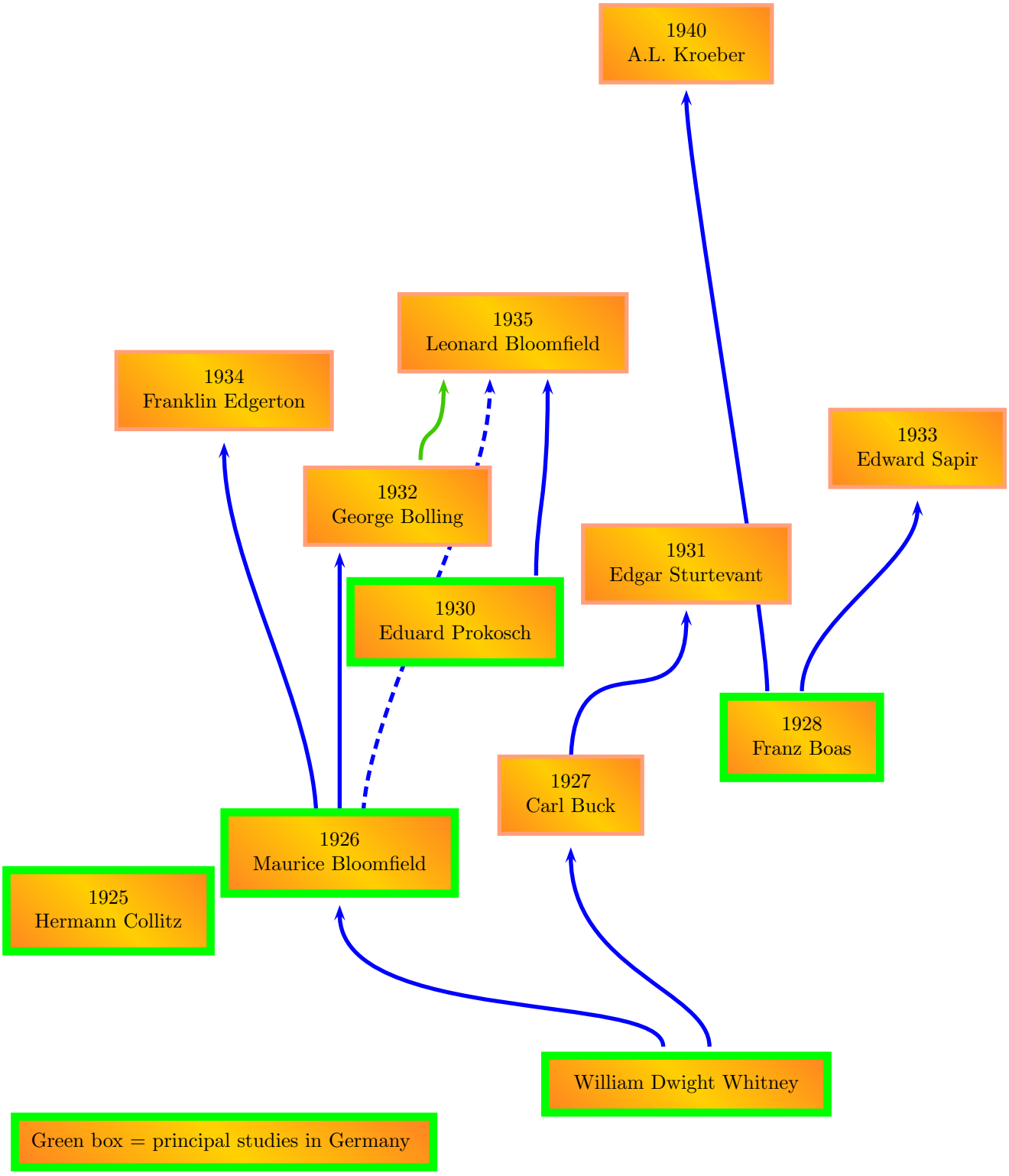


Figure 19: 6.3 Whitney, Germany, and the early presidents of the LSA

Battle in the Mind Fields: Class 5

John A Goldsmith

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, interation 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,[2] 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.*]

[2]Here he is referring to himself, as well as others

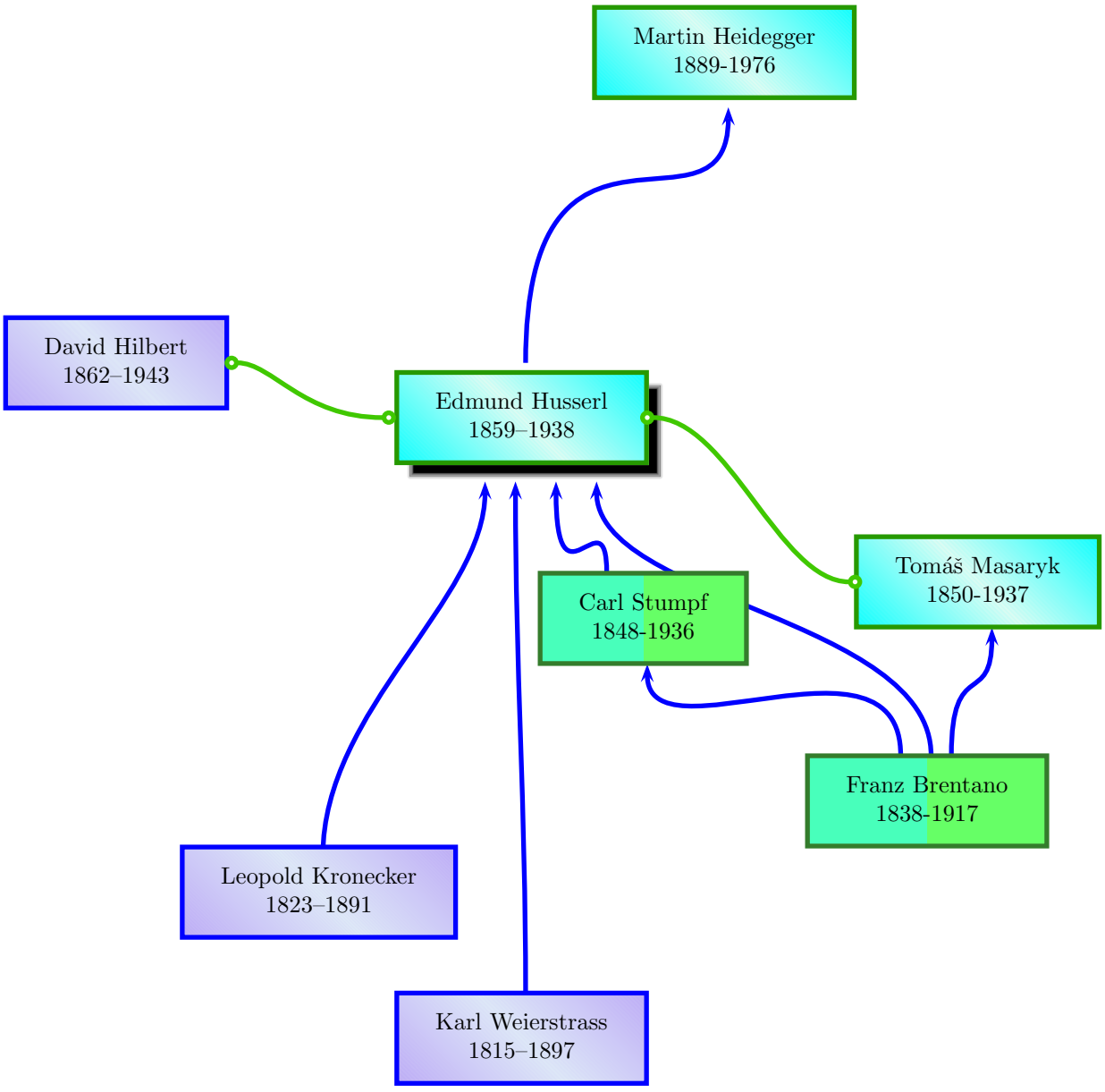


Figure 20: 7.1 Edmund Husserl

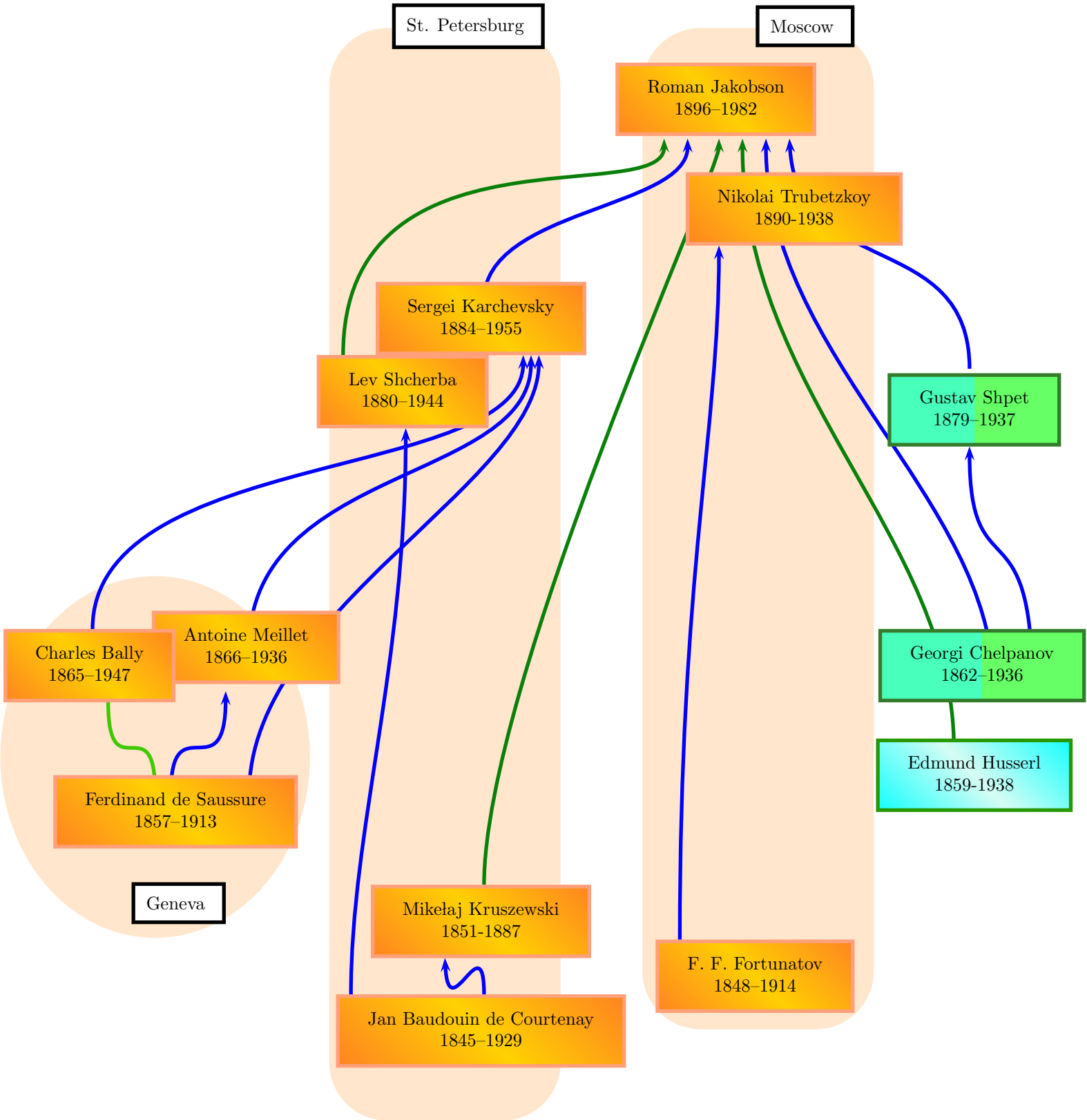


Figure 24: 9.1 Trubetzkoy and Jakobson: early days

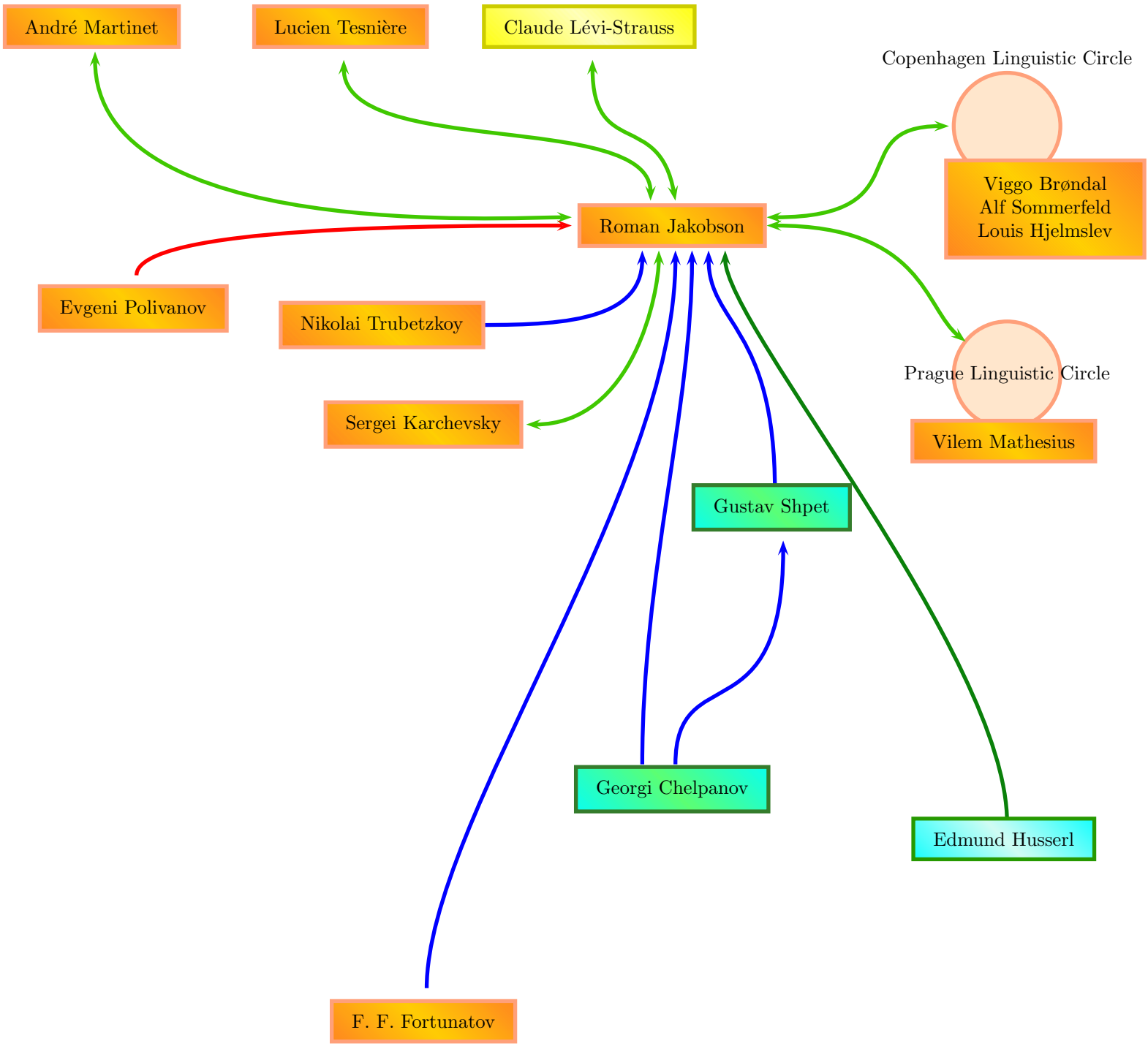


Figure 25: 9.2 Roman Jakobson

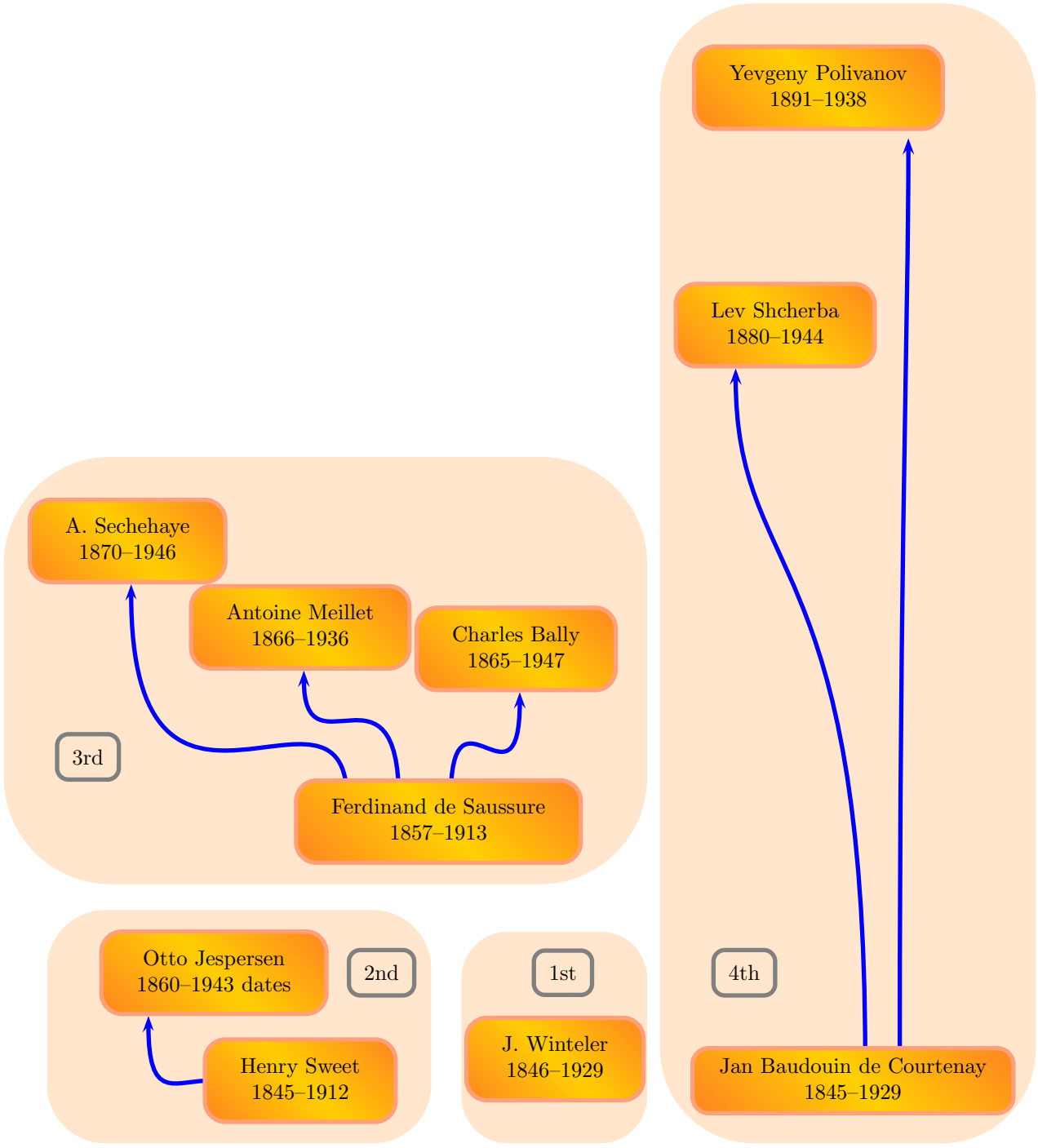


Figure 26: 9.3 Trubetzkoy's versions of the phoneme

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 aspired 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 pub- lished 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 *kitábu* was analyzed phonemically as *kitabu#*.
- walikújawanawákewawíli can be *analyzed* as walikuja#wanawaki#wawili#
- —which in fact is how this sentence would be written in Swahili, though with spaces rather than the symbol #.
- where *walikuja* means 'they came'; *wanawake* means 'women'; and *wawili* 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.

Battle in the Mind Fields: Class 7

American descriptivism, American structuralist linguistics

John A Goldsmith

1: Chomsky 1945 (sic)

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.

2: Hockett 1958: 247

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.

3: Veil of silence

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

4: Fritz Newmeyer on Robert Hall

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 [a] 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.

[a] Hockett had begun to get annoyed about this, as early as 1968, when he wrote:[b]

> [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"
3. Three papers by Zellig Harris, published in *Language* (1942, 1945, 1946)
4. Charles Hockett's "Problems of morphemic analysis" in *Language* 1947
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 frameword: *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 dóes paint	He wíll 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)

11: Syntax: Harris on English auxiliaries 2

He then extended the pattern in the table to include:

a They paint
b They painted
c They don't paint
d They dó 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 auxliary 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.

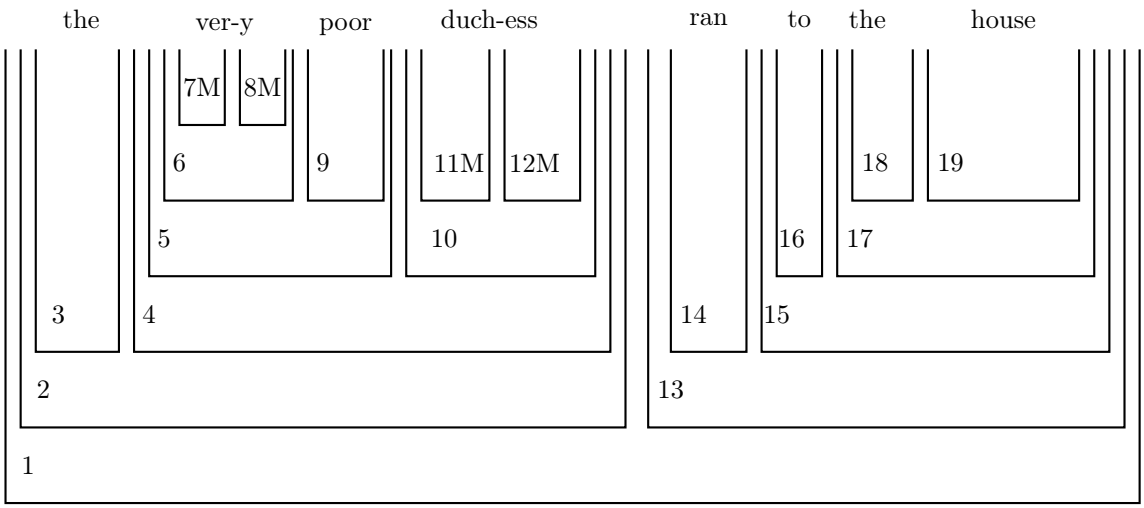
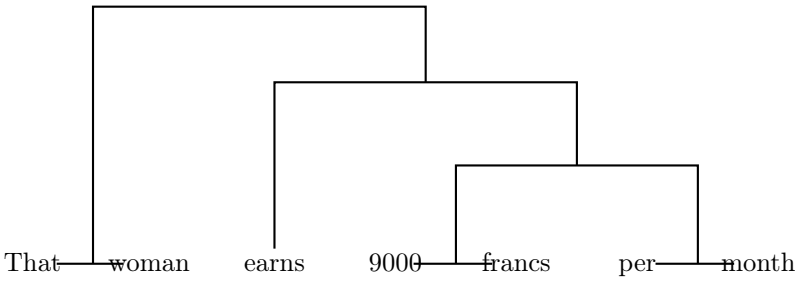
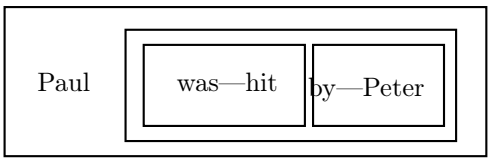


Figure 0.1: Kenneth Pike 1943 *Language*





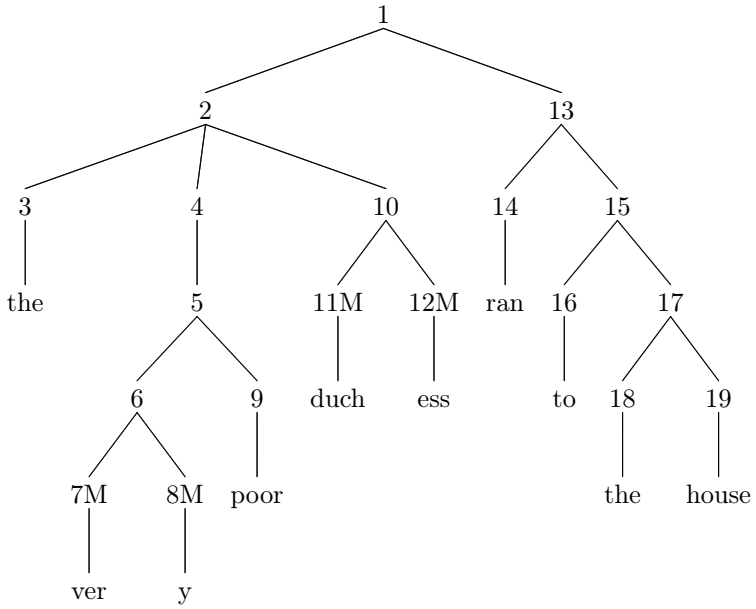


Figure 0.2: Pike's hierarchical syntactic analysis

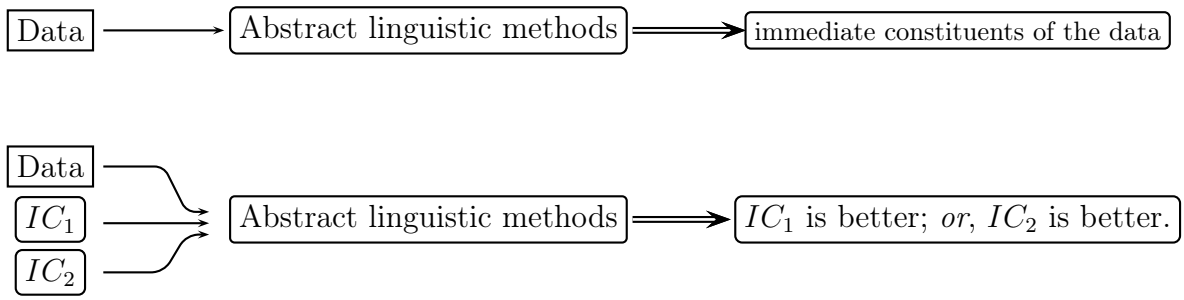
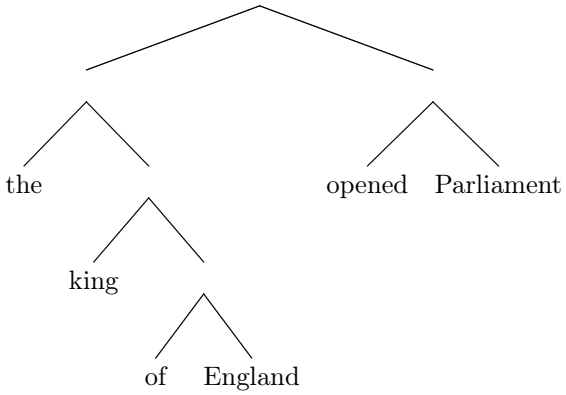


Figure 0.3: Wells's (1947) distinction



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 **??**, **??**, **??**.

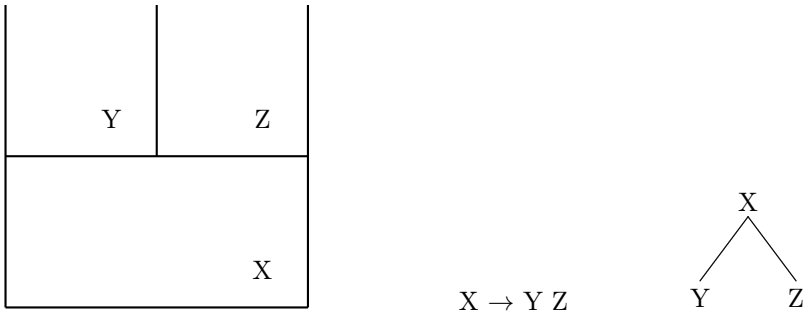


Figure 0.5: A fence, a phrase-structure rule, and a tree

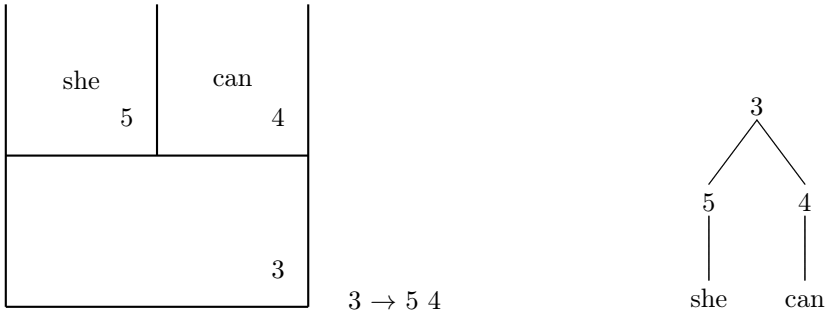


Figure 0.6: A fence, a phrase-structure rule, and a tree

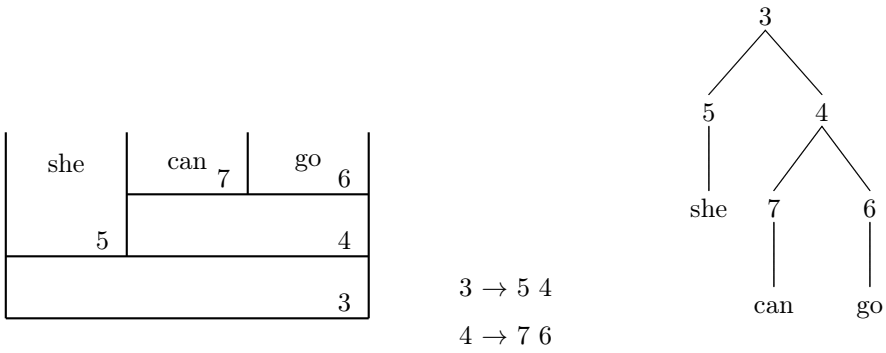


Figure 0.7: A fence, a phrase-structure rule, and a tree

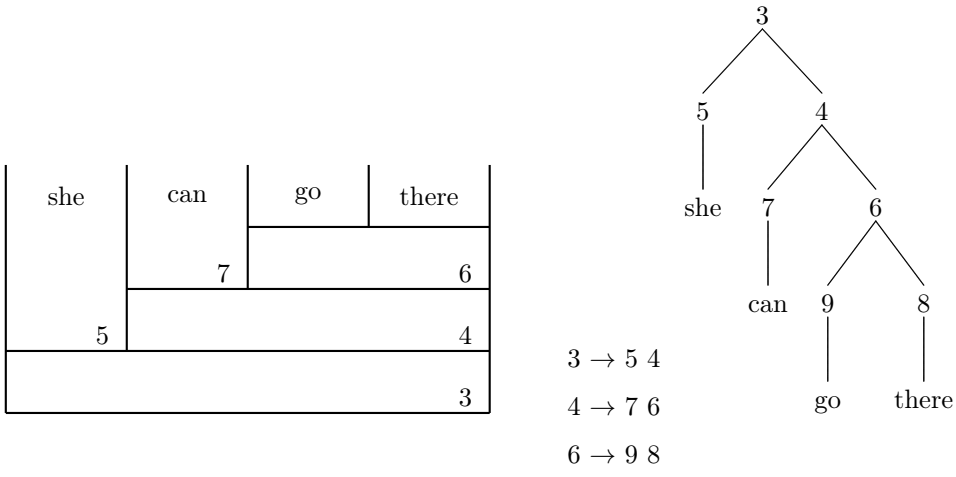


Figure 0.8: A fence, a phrase-structure rule, and a tree

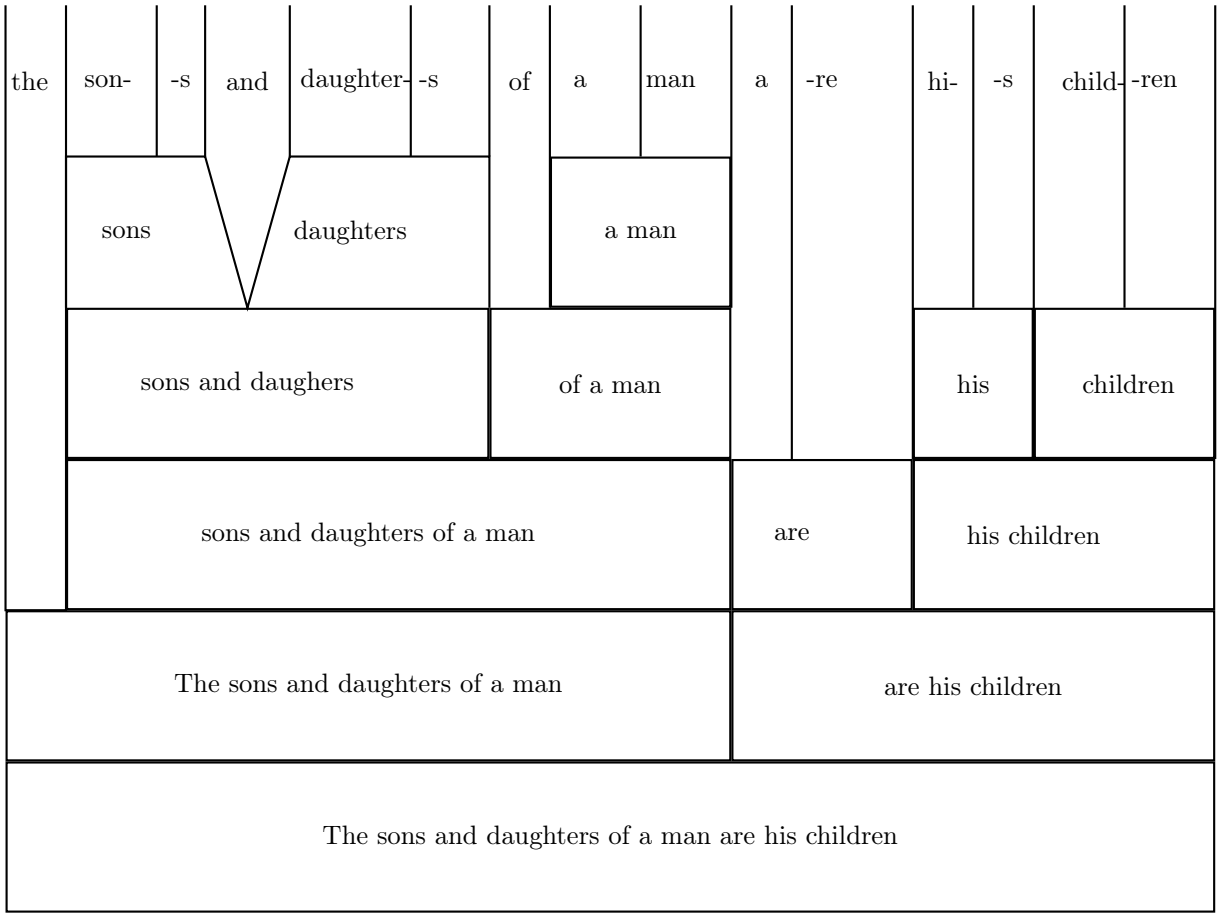


Figure 0.9: Hockett's fence-style representation

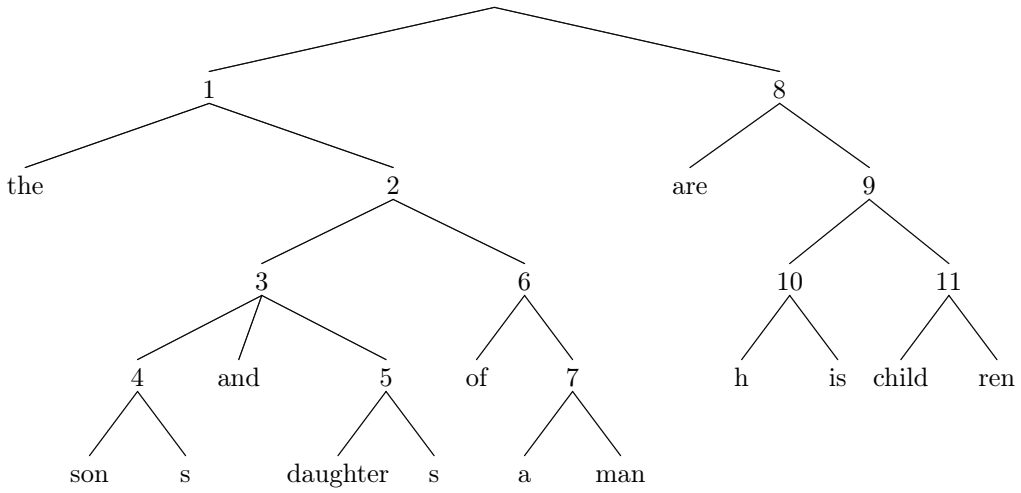


Figure 0.10: Arboreal structure

Figure 0.11: This is a caption

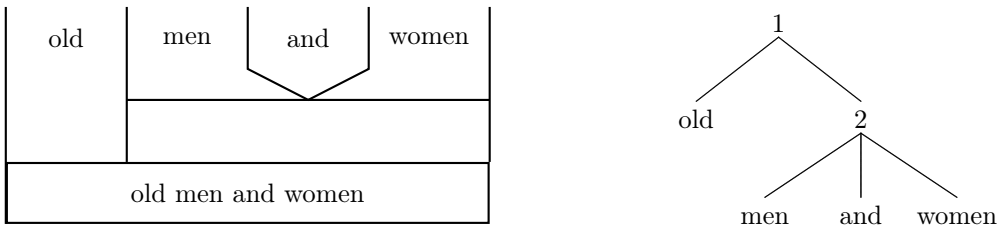


Figure 0.12: Old men-and-women

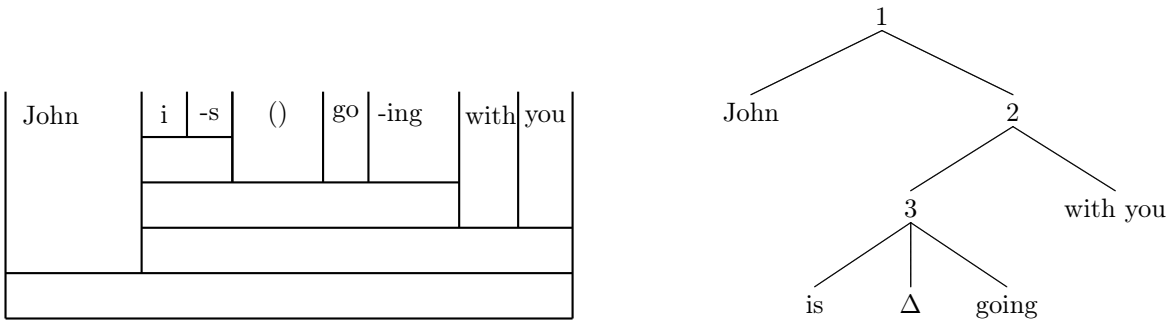


Figure 0.13: Discontinuous constituent: Is John going with you?

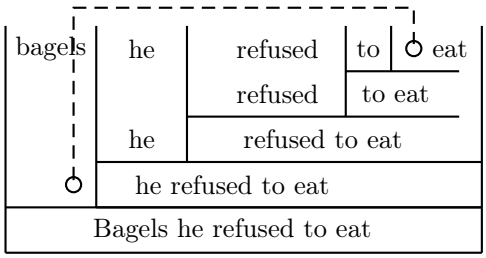


Figure 0.14: Surface and deep grammar disagreeing

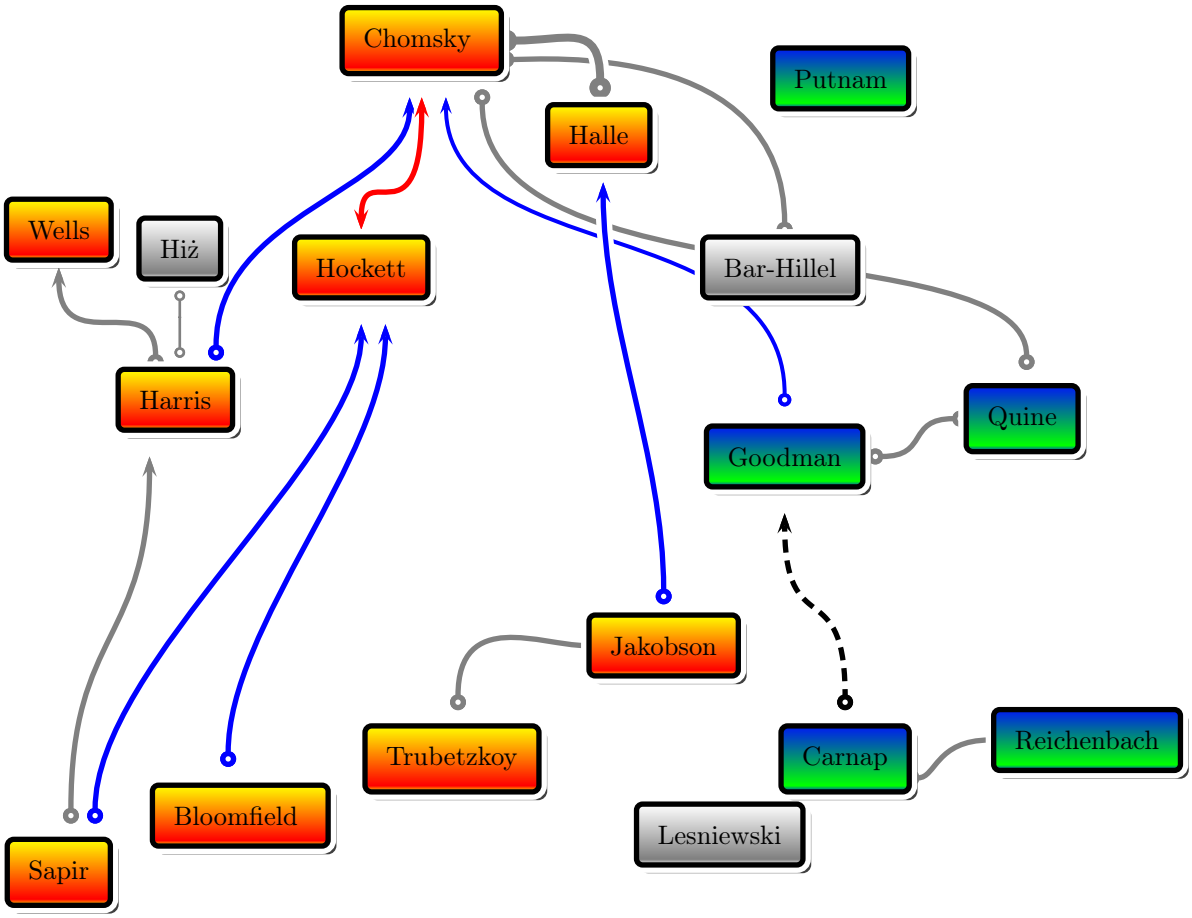


Figure 0.15: Noam Chomsky

Battle in the Mind Fields: Class 8
Noam Chomsky and generative grammar

John A Goldsmith

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* I/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