1. Introduction

- I’m going to divide the past 90 years into three 30-year chunks, starting with how things were in 1924, and then looking at the periods 1924-54, 1954-84, and 1984-2014.

- The middle chunk is where the explosive changes occurred that shaped our modern disciplines of syntax, semantics and pragmatics. And from this perspective, contemporary semantics and pragmatics are only a little younger than generative grammar.

- Much of the early history of semantics and pragmatics took place within logic and philosophy, so the history starts out somewhat disjoint. Only in the late 1960’s did real cooperation between linguists and philosophers get going.
2. Where were we in 1924?

- In 1924, the dominant fields in linguistics were Indo-European studies and comparative philology, with growing influence of anthropological linguistics “as a science” bringing in the study of non-written languages.

- “History” vs “science”: the call for the founding of the LSA argued for the recognition of “the science of language”.

- Semantics – what little there was – was about word meanings; hypotheses about semantic drift were important for historical and comparative work.

- The absence of any “compositional semantics” or “semantics of syntax” was presumably due to the lack of attention to syntax itself beyond issues of morphosyntax.
Where were we in 1924? cont’d

- Hermann Collitz (1855 – 1935) – 1st President of LSA – I-E phonology and morphology (Bryn Mawr, then JHU)
- Maurice Bloomfield (1855 - 1928) – 2nd Pres – Professor of Sanskrit and comparative philology (Yale)
- Franz Boas (1858 – 1942) – 4th Pres - ‘Father of Am. Anthropology”: broke traditions of philology, insisted on importance of linguistics as a science, and the study of languages and cultures without writing (Smithsonian, then Columbia Univ.)
- Edward Sapir (1884–1939) – 9th Pres – studied Germanic linguistics but also N.A. languages. Broad interests included semantics (Sapir-Whorf hypothesis) *Language* 1921 (Chicago, later Yale)
- Leonard Bloomfield (1887 – 1949) – 11th Pres – I-E, Austronesian lgs, Algonquian lgs. Big on linguistics as a science (see call for LSA founding), influenced by logical positivism on what “science” means. (U of Ill > OSU > U of Chicago > Yale)
Where were we in 1924? cont’d

- Early discussions of semantics by linguists:
  - **Semasiology** – Christian Karl Reisig, 1825, in German
  - **La sémantique** – Michel Bréal, 1883 – on widening, narrowing, etc.
  - **Semiotics** – Saussure (1857-1913) - synchronic grammar as the study of the relation between *signifiant* and *signifiée*.

- All that was in Europe, as was Otto Jespersen (1860-1943) with his *Philosophy of Grammar* (1924), and Antoine Meillet (1866-1936).

- In the US, semantics never really got a start, thanks in part to the influence of positivism, behaviorism, and a narrow view of what was permissible in a “science”.
Where were we in 1924? cont’d

- In logic and philosophy there had been huge advances in the decades before 1924, and continuing
- Frege ‘Sinn und Bedeutung’ 1892; ‘The thought’ 1918
- Russell ‘On denoting’ 1905; Russell & Whitehead *Principia Mathematica* 1913
- Wittgenstein *Tractatus logico-philosophicus* 1922
- and between 1924 and 1930 Schönfinkel discovered his combinators; Carnap published *Der logische aufbau der welt*, Lesniewski started publishing his precursors to categorial grammar, Curry published ‘Grundlagen der Kombinatorischen Logik.’
- In short, much of the foundation of formal semantics had just been laid – but unknown to linguists.
3. The first 30 years, 1924-54

- In the tridecade 1924-54, we have the rise of structural linguistics in America, with little semantics and no pragmatics; behaviorism and positivism made semantics almost a dirty word, semantics not fit for scientific study.

- But out of the eye of the linguists, Frege, Russell, Wittgenstein, Carnap, and Curry had been hard at work on the logical analysis of natural language before or in the 1920s.

1954: Yehoshua Bar-Hillel wrote an article in *Language* inviting cooperation between linguists and logicians, arguing that advances in both fields made the time ripe for an attempt to combine forces to work on syntax and semantics together.

He was arguing against logicians who considered natural language too unruly to formalize, and against linguists like Harris who avoided any consideration of semantics as unscientific.

“Bloomfield's strictures against semantics and the use of meaning for linguistic description, though valid against the state of that field at the time he wrote, do not hold against this revitalized science, in the form given to it by Tarski, Carnap, Quine, and others.” (p 235)

1955: Chomsky, then a Ph.D. student, wrote a reply in *Language* arguing that the artificial languages invented by logicians were so unlike natural languages that the methods of logicians had no chance of being of any use for linguistic theory. (Chomsky and Bar-Hillel remained friends.)
3. The middle 30 years, 1954-84

- Bar-Hillel’s hope wasn’t fulfilled immediately, but the big changes of the middle period did lead to cooperation between linguists and philosophers that transformed semantics.

- Emmon Bach (1989) summed up two revolutions: “Chomsky’s Thesis was that English can be described as a formal system; Montague's Thesis was that English can be described as an interpreted formal system.”

- Before Montague, semantics in linguistics (Katz, Fodor, Postal, generative and interpretive semantics) was about “semantic representations”. Accounting for truth-conditions and entailment relations was a totally new idea! But it became the dominant paradigm by the 80’s.
The middle 30 years, 1954-84, cont’d.

- This was also the period of the growth of cognitive approaches (Rosch, Lakoff and Johnson, Jackendoff).
- It was a period of great substantive advances on the semantics and pragmatics of many constructions, and also a period of big foundational debates about the object of study and about the architecture of grammar.
- Model-theoretic semantics, based on truth-conditions, grew out of the work of anti-psychologistic logicians and philosophers like Frege; semantics used primitives like truth and reference (in a possible situation), which conflicted with both Chomskyan “I-language” and cognitive approaches.
- But substantive progress overrode foundational worries.
The middle 30 years, 1954-84, cont’d.

- This was also the period of the birth and rapid growth of pragmatics as a subfield of linguistics.
- Linguists discovered Grice, presuppositions, speech act theory, indexicality and context-dependence. Much early pragmatics grew out of generative semantics – early CLS volumes are filled with classics of pragmatics (Larry Horn, Georgia Green, Jerry Morgan, …)
- Within formal semantics, issues like presupposition and the dynamics of anaphora soon led to formal pragmatics and to a tight connection between formal semantics and formal pragmatics. (Gazdar, Karttunen, Kaplan, Heim)
- Having a good pragmatics helps simplify semantics, just as good semantics can help simplify syntax.
Lexical semantics also became more sophisticated, e.g. the pioneering work by Fillmore, with attention to presuppositional vs. primary aspects of word meaning.

The lexicon received relatively little attention within early generative grammar and formal semantics, where attention centered on recursive syntactic mechanisms and the challenge of formulating a compositional semantics – both tended to take the lexicon as a “list”.

Pressures from syntax spurred more work on the lexicon – argument structure, Aktionsart, and other aspects of lexical meaning crucial for composition.

Other big lexical issues – prototype theory, semantic shifts, metaphor, …
The middle 30 years, 1954-84, *cont’d.*

- Chomsky 1957 SS; 1965 *Aspects*; 1971 DS, SS, and SI
- Carnap 1956 *M&N*; Quine 1960 *W&O*; Davidson 1967 *LF of A S’s*
- Katz & Fodor 1963; Katz & Postal 1964 *Integrated Theory …*
- Montague 1970 English as a formal lg; Universal grammar; 1973 The proper treatment of quantification in ordinary English (PTQ)
- Lewis 1970 General semantics; 1975 Advs of Quantification
- Fillmore 1971 Types of lex. information; *Lectures on Deixis*
- Keenan 1971, Two kinds of presupposition
- Jackendoff 1972 *Semantic Interpretation in Generative Grammar*
- Stalnaker 1974 Pragmatic presuppositions; 1978 Assertion
- Karttunen 1977 Syntax and semantics of questions (1\textsuperscript{st} art in L&P)
The last 30 years, 1984 – 2014

- By the early years of this last period, semantics had become “established”.
- Core curriculum now Phonology, Syntax, Semantics.
- This was also the period of the rise of Cognitive Science, and further interactions among linguistics, philosophy, psychology, computer science, AI.
- Semantics within a number of paradigms. Formal semantics; LF within Chomskyan framework (“linguistic semantics as syntax”); semantics in Cognitive Linguistics (metaphor, radial meanings; non-modularity)
- Most people now doing semantics/pragmatics got PhD after 1984.
The last 30 years, 1984 - 2014, cont’d.

- As semantics has matured, it has expanded in many ways, like other fields.
- Semantic typology: in formal semantics, early work by Keenan, then “Cross-linguistic quantification” project (Bach, Jelinek, Kratzer, & Partee, eds., 1995). Since 2001 SULA conferences …
- In Cognitive Linguistics, schemas, prototypes, semantic maps for typological/comparative work
- Psycholinguistic studies of semantic processing; language acquisition. Both flourishing – example: a 2013 workshop entirely devoted to progress on children’s acquisition of quantifiers. Whole roomful of acquisitionists who know formal semantics – a shock!
Another direction to mention: computational semantics.

AI has sometimes been antagonistic to all formal linguistics; but other directions in AI have drawn on and contributed to theoretical work.

Likewise, some kinds of computational semantics are purely statistical – and e.g. Google is very good at what it does. (Jelinek: “Every time I fire a linguist …”)

Most recently there are signs of bridging the gap between statistical and formal approaches. Nuance just bought Dahlgren’s NLP company Cognition, which was based on formal semantics – ‘statistics have gone as far as they can, we need some logic’.
I have to mention one seeming paradox, which relates to open challenges as well as to past progress.

The Chomskian revolution made linguistics an early pillar of cognitive science.

Yet Frege’s anti-psychologistic stance, shared by Montague, was crucial in the foundations of formal semantics.

Frege argued that truth-conditions, and not mental “ideas”, have to be at the core of the meaning of a sentence.

And the work of generations of linguists and philosophers has shown the fruitfulness of that approach: first formalize what the semantics of our language IS – what our sentences say about how the world is. Then figure out how our knowledge of it, such as it is, is acquired and exploited.
The last 30 years, 1984 - 2014, cont’d.

- This stance might seem to exclude formal semantics from cognitive science, but I believe that on the contrary, it makes the contributions of semantics to cognitive science all the more interesting.

- Human language is a remarkable achievement; part of what is remarkable is how we implicitly recognize and navigate the social construction of meaning.

- When we converse, we simultaneously exchange information and negotiate meaning. David Lewis’s work on “Convention” was an early milestone in exploring the relation between individual competence and social intelligence, an important dimension that is still under-explored.
Postscript

I’m currently working on a book on the history of formal semantics. I’ve tried to make this short talk not just about formal semantics, but of course that’s what I know best. I apologize for the inevitable biases.

And of course in such a short talk I had to omit mention of many people who deserve mention, along with most of the history of the last 90 years.

Papers and slides reporting some aspects of my history project can be found on my website; and those contain acknowledgements that I’ve left out here.

Feedback is welcome, to partee@linguist.umass.edu.