The scope of linguistics

John Goldsmith
Origins of linguistics

• In several cases, the roots of linguistics lies in the wish to maintain sacred texts.
  – Most notably in the preservation of the Vedas, and the tradition in India of which Panini’s work (c. 6th century BC) is the pinnacle.
  – Islamic tradition began a century after the writing of the Koran, to counter the evolution of Arabic dialects. (Sibawayhi)
  – Medieval Hebrew grammarians (heavily influenced by Arabic tradition).
Linguistics in the classical world

• Dionysius Thrax (2\textsuperscript{nd} century BC) Greek linguist of great influence. Provides an analysis of Greek parts of speech (categories of words).
Linguistics?

• Systematic (or, scientific) treatment of the structure of language.
• The search for an explanation of aspects of language.
• Ah – but what is an explanation? In the late Middle Ages, it involved the study of the writings of the scholars from the Classical period (Roman, Greek)…
19th century

A major component of the 19th century’s understanding of an explanation was a precise account of the historical origin of whatever it is we are studying: a people, a word, a language, a nation.

The search for the history of European languages, especially insofar as this bears on what the peoples of Europe are.
• Etymologies
• Law of (exceptionless) sound change: sounds change in mechanical ways over time.
• The discovery of Indo-European
Indo-European

- Indo-Iranian languages
- Italic languages (including Latin and its descendants, the Romance languages)
- Germanic languages
- Celtic languages
- Baltic languages
- Slavic languages
- Albanian language (and extinct cousins)
- Anatolian languages (extinct, most notable was Hittite)
- Tocharian languages (extinct, Chinese Turkestan):
  - Greek
  - Armenian
## Grimm’s Law

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<th>Labial</th>
<th>Dental</th>
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<td>Proto Indo-European</td>
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<td>p t k</td>
<td>f θ x foot, fire; three; 100, hemp, heart</td>
<td>p t k[c] pedal; triple</td>
<td>p t k pod-, pyro-; cannabis, cardiac</td>
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<tr>
<td>b d g</td>
<td>p t k hemp, foot, knee</td>
<td>b d g pedal, genuflect</td>
<td>b d g cannabis, cardiac</td>
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<tr>
<td>bh dh gh</td>
<td>b d g brother</td>
<td>f(b), f(b,d) h fraternal</td>
<td>f θ x</td>
<td></td>
</tr>
</tbody>
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Cognates

Proto-Indo-European:  *wih- [*weid-, *woid-], "see," "know"
  *gno-, "know"

  **Greek:** ὤνα [idéa], "appearance, kind, sort, nature; Form"
  ὤνος [infinitive]
  ὠνός [eisinos], "I saw"; ὠνόδα [oïda], "I have seen, I know"
  ὠνός [eidos], "form, shape, figure; Form; species"
  γνώσκω [gignósko], "I know"
  ἀγνωστός [ágnóstos], "unknown, not be be known"

  **Sanskrit:** विद "find out, comprehend, know, know about"
  विद्या "knowledge, learning, science"
  वेदा "ritual knowledge, lore, sacred knowledge, Veda"
  व्यज्ञ "know, recognize, perceive, learn"
  ज्ञान "knowledge"; avidya, "ignorance"

  **Urdu:** janna, "know"
    **Punjabi:** janna, "know"

  **Latin:** videre, "to see"; video, "I see"; vidi, "I saw"
  visum [visus, visa], "seen, appearance"
  noscere [gnoscere], "to know"; nosco, "I know"
  cognoscere, "learn, know"; cognosco, "I know"

  **Italian:** vedere, "to see"; vedo, "I see"; vidi, "I saw"
  conoscere, "to know"; conosco, "I know"

  **Romanian:** vedea, "to see"
    cunoaște, "to know"

  **Spanish:** ver, "to see"; veo, "I see"; visto, "seen"
  vista, "sight, view, appearance"
  conocer, "to know"; conozco, "I know"

  **French:** voir, "to see"; vois, "I see";
    connaître, "to know"; connais, "I know"

  **German:** wissen, "to know"; weiß, "I know"; gewußt, "known"

  **Old English:** witan, "be aware of, know, understand"
    cnawan, "to know"; wis, "wise"

  **Middle English:** witen, "to know"; wis, "wise"
    knowen, "to know"

  **Modern English:** wise, wit, witty

  **Russian:** видеть [videt], "to see"
    знать [znat], "to know"
20\textsuperscript{th} century

• (Extending from the 19\textsuperscript{th} century: ) the discovery of the vastness of the non-Western world: in this case, of the thousands of non-European languages. What can they tell us about Language?

• Especially in the United States: the desire to understand the (largely unwritten) languages of non-European peoples (Native American, in the North American tradition). Rise of field of anthropology.
Linguistics departments…

• arose (later) either from Classics departments (Chicago) or Anthropology departments.
Algorithm as mode of explanation

• An algorithm is a completely \textit{explicit} procedure that could be performed and accomplished by a finite digital device.

• The notion has antecedents before the 20\textsuperscript{th} century (especially in development of logic), but it became important in the development of the philosophy of mathematics, and then the development of the computer (1940s – 1950s).
Abu Ja’far Mohammed ibn Musa Al-Khowarizmi

Hisab al-jabr wál-muqabala
Liber Algorismi de numero Indorum
Explanation...

• Psychological (functional) explanation: something about language is *explained* if it can be shown to follow from psychological principles.

• Sociological explanation: something is *explained* if we can place it in a sociological context. How do languages change? What groups of people are linguistically innovative, which ones are conservative?
Fields of linguistics

• Historical linguistics (one sense of explanation).

• “Theoretical linguistics”: algorithmic explanation; influence of Noam Chomsky.
  Syntax: algorithmic, functional/cognitive
  Phonology: American and European structuralism; Generative phonology (1965-1975?)…
Phonology

• Structuralism 1920-1965
• Generative phonology 1965-1975
  Representation-based phonology
  (autosegmental, metrical phonology)
  1975-1990
• Lexical phonology (1980s)
• Optimality theory (1990s)
Linguists

1850
Ferdinand de Saussure

1900
Leonard Bloomfield

2000
Edward Sapir
Charles Hockett
Noam Chomsky
Structuralism
1920-1965

• Ferdinand de Saussure
• Nicolas Trubetzkoy
• Roman Jakobson
• Edward Sapir
• Leonard Bloomfield
• Zellig Harris
• Charles Hockett
• Kenneth Pike
Ferdinand de Saussure 1857-1913

• Cours de linguistique générale
• The distinction between synchronic and diachronic approaches to language, and the significance of synchronic approaches
• Language as speech occurrences, language as a system

Also: IE laryngeals; see http://www.utexas.edu/cola/depts/lrc/iedocctr/ie-docs/lehmann/reader/chaptersixteen.html
Count Nicolas Troubetzkoy
1890-1938

• The development of structures of phonemes in inventories, and of phonological features (along with Roman Jakobson)
Roman Jakobson 1896-1982
Edward Sapir 1884-1939

• U of Chicago 1925-1931
• The development of Native American studies: the significance of historical studies of unwritten languages
Leonard Bloomfield 1887-1949

- University of Chicago 1927-1940
Zellig Harris 1909-1992

- Chomsky’s teacher
- Inventor of transformational grammar
Charles Hockett 1916-2000
Kenneth Pike 1912-2000

- Tone languages
- Missionary
- Work on the development of orthographic systems for unwritten languages
Cognitive revolution

A development of the cybernetics movement (1940s-1950s)

– Norbert Wiener, John von Neumann
Cognitive revolution of the 1950s

Noam Chomsky
Marvin Minsky
Seymour Papert
George Miller
John Holland
Cybernetics - Cognitive sciences

1900: John von Neumann
2000: Claude Shannon, Noam Chomsky, George Miller, Norbert Wiener, Warren McCulloch & Walter Pitts

1900-2000:
- Claude Shannon
- Warren McCulloch & Walter Pitts
- John von Neumann
- Alan Turing
- George Miller
- Norbert Wiener
- Noam Chomsky
Generative Phonology

- *Sound Pattern of English* 1968
- Noam Chomsky (1928-) and Morris Halle (1923-)
Generative grammar, more generally

- Dated from 1957: Chomsky’s *Syntactic Structures*
- What are the issues?
  What makes a discipline a science? As far back as the 1920s, linguists have said *Finally we’ve gained the status of science.*
  In the structuralist period (in the U.S.), the focus was on *scientific method*: a set of methods for obtaining data without subjective bias.
• In the generative era, the structuralists’ belief that linguistics was a kind of anthropology (a study of culture) was rejected; Chomsky characterized structuralist models as unconcerned with *truth*.

• He proposed that grammars were psychological models: *truth* of linguistics was psychological truth.
• Chomsky also adopted an interpretation of explanation that was thoroughly algorithmic.
Phonology after generative phonology

- Metrical phonology: Mark Liberman, Alan Prince, Bruce Hayes
- Autosegmental Phonology: John Goldsmith, G. N. Clements
- Lexical Phonology: Paul Kiparsky
- Optimality Theory: Paul Smolensky, Alan Prince, John McCarthy
Syntax

• Generative syntax: 1957-1967
  
  Aspects of the Theory of Syntax
  (Chomsky, 1965)

Generative semantics: the explanatory foundation of syntax is logical form. Lakoff, Ross, McCawley, Postal.

Relational grammar

Generalized Phrase Structure Grammar
Generative grammar

- Chomsky: *Syntactic Structures* 1957
- *Aspects of the Theory of Syntax* 1965
- Generative semantics / interpretive semantics dispute: late 1960s pit Chomsky (Jackendoff...) against Lakoff, McCawley, Ross, and Postal.

The issue? As I see it, partly social and partly based on the major question...
Mediationalist vs distributionalist views of language

• Mediationalist views the essence of language as the mediation between the outer world (of speech) and the inner world (of thought)

• Distributionalist views the essence of language as a complex system formed by a large number of semi-autonomous components, obeying similar but distinct sets of principles.
Noam Chomsky
George Lakoff
James McCawley
Haj (John R.) Ross
Cognitive grammar

• Lakoff – metaphor as a cognitive basis of language
• Ron Langacker
Theoretical and descriptive linguistics

• Ongoing tension between theoreticians and descriptive linguists.
• Computational linguistics: The impact of very large corpora – the nature of data
• EMELD project
Sociolinguistics

• William Labov
• Pragmatics
• Descriptive linguistics