Language, Mind, and Brain  
Fall 2020  
October 15 – December 9

Co-Instructors:
- Haury Laureate Professor Noam Chomsky
- Regents’ Professor Tom Bever
- Professor Massimo Piattelli-Palmarini

Contact Information:
- SBS Community Classroom: Kerstin Miller  
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- Teaching Assistant: Andrea Fulgham  
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Course Description:
This course uses language as a lens into the human mind and brain. We explore the field of “biolinguistics,” the scientific investigation of language and mind that Noam Chomsky founded 70 years ago and has led since then. The theme of this program and the course is that language and other mental abilities are based in a combination of genetic capacities, maturation, experience, along with physical and computational constraints. Professors Chomsky, Bever, and Piattelli-Palmarini will take turns lecturing individually and in occasional joint discussions: time will be allotted for discussions on a range of topics that integrate the study of language with research on the mind and brain.

A few examples of themes that run through many of the specific classes include:
- How does being puzzled about simple everyday observations contribute to scientific progress (Chomsky)?
- How has language science revealed and reflected basic issues in cognitive science (Bever)?
- What does language science tell us about the nature and universal
properties of language (Chomsky)?
• What do we know about how the brain is organized for language and cognition (Piattelli-Palmarini)?
• What does the perception of speech tell us about unconscious computations and consciousness (Bever)?
• What do we know, and what are researchers learning about the genetics and evolution of language and mind (Piattelli-Palmarini)?
• Why does word meaning depend on mental processes as well as maps of the world (Chomsky)?

Class Format:

This is an online course.

Videos of Lectures. Each week 2-5 pre-recorded videos of lectures will be assigned, along with readings, that students can view at their own pace and time.

Submitting questions and comments. At the end of each week, course participants can submit comments and questions to Andrea at fulghama@email.arizona.edu on the content of that week’s assignments. We also encourage class attendees to send your questions after each class, or as you think of them later.

Special LIVE ONLINE sessions: The instructors will review your input and summarize themes for a live ZOOM presentation and group discussion at the beginning of the following week. The time of these ZOOM sessions will be set to maximize access by different time zones, in the early morning each Tuesday, US Mountain Time. The sessions will also be recorded so they can be consulted later by students who cannot attend the meetings. NOTE: ALL ZOOM MEETINGS WILL BE ON TUESDAY MORNING OF THE WEEK THEY ARE ASSIGNED, UNLESS OTHERWISE INDICATED.

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Teaching Assistant Availability. Once they are registered, Community Classroom attendees have an experienced Teaching Assistant devoted to them, to answer questions and help with the course content. They will receive access to all the posted readings. Community members do not take quizzes and write papers and can go through the readings at their own choice and pace.

The course schedule and a brief description of topics (subject to slight changes, final syllabus will be available by the first day of class, Oct. 15: students should consult the course description then to see the final schedule).
Readings:
All readings and videos will be uploaded to the Forum website that was created specifically for Community members. You need to be registered for the course in order to access those materials.

TWO MAIN THEMES OF THE COURSE

The first theme explores evidence of different kinds that language is not based on words alone, but on sentences and syntactic organization of words into sentences. The second focuses on what language is, how we can develop a theory of it, how it integrates with behavior and the brain, and how it may have evolved.

Schedule as of September 9, 2020. Please note that this schedule is subject to some changes. The final schedule will be available on October 12, 2020.

THEME 1: THE SENTENCE AND ITS WORDS

October 15: Overview of the course. A live ZOOM lecture at 10 AM Tucson time introducing all instructors and Teaching Assistants. A summary of the course structure, its goals and a general review of the topics and themes in the course. The time will be set in the syllabus, prior to the course, to accommodate as many distance online students as possible, mid morning, Tucson time.

► Lectures to consult:

The nature of scientific theories: recognizing that everyday facts required real explanations: the discovery and invention of gravity as an example: historical review on Galileo, Newton etc. The continuing mystery of what motion really is. (Chomsky). Comments by Piattelli-Palmarini and Bever and general review of basic evidence for the innateness of sentences in human language.

Why we think there is a biology of language. Evidence from studies of rapid learning in childhood, special deficits associated with neurological cases, new genetic studies, etc. (Piattelli-Palmarini)

Week of October 26:

October 27: Zoom meeting – 10 AM Tucson time: Discussion of course content and issues raised concerning scientific theories.
Lectures to consult:

**Overview of major theories in Cognitive Science**: 19th century ideas about the mind and language; the rise and fall of behaviorism, and the rediscovery that language is not just made of words, but sentences are real psychological objects that need a theory of their structure and how they are generated. (Bever).

**Attempts and failures to teach languages to animals.** Particular discussion of teaching sign language to the chimpanzee, Nim: speculations on why animals cannot learn anything like language. (Bever). Discussion of what a word is, and whether animals show any evidence of learning words. Comments by Chomsky and Piattelli-Palmarini.

**Week of November 2:**

**November 3**: Zoom meeting – 10 Am Tucson time: Discussion of previous week’s topics.

Lectures to consult:

**Early stages of language learning** by children. What are words? Very young children show evidence of awareness of syntax and sentences, not just words. (Professor Cecile McKee). Language as implicit discovery: Comments by Chomsky.

**American Sign Language** as a special case of how language can be externalized silently, showing that it is an inner mental capacity, not uniquely dependent on hearing and speaking aloud. What we can learn from teaching deaf children to read (Professor Sam Supalla).

**How today’s “talking/understanding” computer programs like Siri work**: they “understand” language based on enormous memories, but fail on simple tests of grammaticality of specific sentences. (Professor Sandiway Fong and Chomsky).
THEME 2: WHAT IS LANGUAGE?

Week of November 9:

November 10: Zoom meeting – 10 AM Tucson time: Discussion of the first seven lectures by instructors and guests. Conclusion: To understand what language is, we need theories of words and sentences, and how they interreact in the mind.

► Lectures to consult:

The nature of grammar –. Overview of ideas about the structure of language. The convergence on the “minimalist” program of language research, with recursion as the primary process. (Chomsky). Discussion by Bever and Piattelli-Palmarini.

The architecture of grammar
Part One: What is universal in the architecture of grammar? Internal phrase building, externalization mechanisms. (Chomsky) Part Two: “Parameters” of language—dimensions on which language can vary, i.e. what is NOT universal (Piattelli-Palmarini)

Week of November 16:

No ZOOM meeting this week

► Lectures to consult:

Semantics in relation to syntax and general knowledge (Piattelli-Palmarini).

Typical theories of reference are inadequate: why, like inner language, meanings are internalized structures and processes (Chomsky).

How syntactic structures may be processed in the externalization system. The organization of syntactic processing and statistical generalizations in language comprehension. (Bever)
**Week of November 23 (Thanksgiving week):**

**November 24:** Extended Zoom meeting – 10 AM Tucson time: *questions and answers about the nature of grammar and syntactic structure models.*

► No specific lectures to consult

**Week of November 30:**

► Lectures to consult:

  - **Language in the Brain:** Cerebral Asymmetries and the computational power of the left hemisphere: evidence (Piattelli-Palmarini & Bever).

  - **The Role of Natural Laws in shaping biological traits** in general, and language in particular (Bever, on learning to walk; Piattelli-Palmarini on the possibility of deep physical laws and language).

**Week of December 7:**

► Lecture to consult:

  - **The evolution of language,** Why only us? What we know, what we can infer, what we don’t know, what we hope to know. Chomsky, Piattelli-Palmarini, Bever and discussion.

**December 9:** Final Zoom meeting – 10 AM Tucson time: Overview/Summary of the main themes and phenomena in the course: open period for class discussion.