



THE UNIVERSITY OF ARIZONA  
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

## COMMUNITY CLASSROOM

### 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 “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, and experience, along with physical and computational constraints. Professors Chomsky, Bever, and Piattelli-Palmarini will take turns lecturing individually and 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.

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 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 a semi synchronous **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.

**Special LIVE ONLINE sessions:** The instructors will review participants' 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, **at 10AM each Tuesday, US Mountain Time**. The sessions will also be recorded so they can be viewed later by participants who cannot attend the live meetings. Registered participants will receive the zoom event information and password a few days prior to each live online zoom event.

**Submitting questions and comments.** By Sunday evening of each week Arizona time, course participants can **submit comments and questions** to Andrea Fulgham at [fulghama@email.arizona.edu](mailto:fulghama@email.arizona.edu) on the content of the previous week's videos and assignments. We will assemble the common questions and comments, and discuss them during the immediately following Tuesday ZOOM session.

**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 or write papers and can go through the readings at their own choice and pace.

The course schedule and a brief description of topics follows (subject to slight changes, the 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).

***Please check the Forum website and schedule regularly for minor updates.***

## **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 structure 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 **November 10, 2020**

## **THEME 1: THE SENTENCE AND ITS WORDS**

### **Week of October 12:**

#### ► Lectures:

**Introduction to course themes and basic concepts** (Bever).

**The nature of scientific theories:** recognizing that everyday facts require *real* explanations: the discovery/invention of gravity, and the overthrow of the mechanistic universe (Chomsky).

**Impossible Languages.** Structure dependence in languages, the “poverty of the stimulus” for children acquiring language, syntax relies on structure, not linear order (Piattelli-Palmarini).

#### → Readings:

Impossible Languages Chapter I (Moro)

Impossible Languages Chapter II (Moro)

A biolinguistic Agenda (Hauser and Bever)

**Please view the lectures and submit possible questions to Andrea Fulghama no later than Sunday evening October 18, Arizona time.**

### **Week of October 19:**

**October 20:** Live online Zoom meeting – ***The first live online ZOOM lecture at 10 AM Arizona time (please note that at that point this is still Pacific Time):*** Intro-ducing instructors and Teaching Assistants. The class will start with the half hour video, **introduction to the course themes**, (which is assigned for the week). Then the three instructors will engage in a discussion of the themes of the course.

► Lectures:

**Overview of major theories in Cognitive Science:** 19<sup>th</sup> 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.

→ Readings:

Signing Behaviors in Apes: A Critical Review (Seidenberg & Petitto)  
Psychological reality of grammar, Students eye view of Cognitive Science (Bever)  
The Biological Nature of Human Language (Di Sciullo et al.)

**Week of October 26:**

**October 27:** Zoom meeting – **10 AM Arizona Time** (please note that at that point this is still **Pacific Time**): Discussion of previous week's topics.

► Lectures:

**Early stages of language learning** by children. As early as we can study language in infants and toddlers, we find its various elements. We illustrate studies of infants with video clips, emphasizing their relevance to course themes. In particular, the early acquisition phenomena reflect the interaction of maturation and experience, with the nature and universal properties of languages. (Professor Cecile McKee). 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).

→ Readings:

Language Acquisition (Fromkin, Rodman & Hyams)

Plausibility and subcategorization preference in children's processing of temporarily ambiguous sentences (Traxler).

## **THEME 2: WHAT IS LANGUAGE?**

### **Week of November 2:**

**November 3:** Zoom meeting – **10 AM Arizona time** (by then **MST**): **Discussion of the first seven lectures** by instructors and guests. Conclusion: To understand what language is, **we need theories of both words and sentences**, and how they interact in the mind.

► Lectures:

**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)

→ Readings:

Chapter 2: Brief Overview of the History of Generative Syntax

Lasnik & Lohndal)

The Minimalist Program in Syntax (Lasnik)

### **Week of November 9:**

**November 10:** Zoom Meeting—**10AM Arizona (MST) time**. Discussion of previous week's lectures on grammatical structures, processes and variation.

► Lectures:

**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).

→ Readings:

Semantics – Introduction (Kearns)

Handout on Semantics, Linguistics 211 (Piattelli-Palmarini)

Some sentences on our consciousness of sentences (Townsend and Bever)

**Week of November 16:**

**November 17:** Zoom Meeting—**10AM Arizona (MST) time**. Discussion of previous lectures on semantics.

► Lectures:

**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).

**Labels, Constituency, and Structure**—the relation between cognitive computation and its biological underpinnings in the domain of language (Doug Saddy, Professor of Language Sciences and Director of Centre for Integrative Neuroscience and Neurodynamics at the University of Reading in the UK)

→ Readings:

Language, mind and brain (Friederici et al.)

At the Interface of (Bio)linguistics, Language Processing, and Neuropsychology (Krivochen review of Laka, Sanz & Tanenhaus)

What Is the Sound of thought (Moro)

### **Week of November 23:**

**No Zoom Meeting** – (Thanksgiving)

No lectures. Optional videos to be specified.

### **Week of November 30:**

**December 1: Zoom meeting—10AM Arizona (MST) time.** Discussion of week of November 16<sup>th</sup> videos.

► Lectures:

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

**What Darwin got wrong;** Issues and difficulties in classic Darwinian Evolution: current exaptationist models of evolution and epigenetics. (Piattelli-Palmarini)

**Enduring issues in the psychology of language.** Relating a syntactic theory to language behavior; group differences in neurology of language, the “miracle” of the conscious representation of normal conversation.

→ Readings:

Language architecture and its import for evolution (Chomsky)  
Evolution and Language (Fodor and Piattelli Palmarini)  
Noam's Ark (Bever and Montalbetti)

### **Week of December 7:**

**December 9** (note this is **Wednesday**, not Tuesday): **Final Zoom meeting – 10 AM Arizona (MST) time:** Overview/Summary of the **main themes and phenomena in the course:** open period for class discussion.