

Linguistics 602: Seminar in Experimental Methods in Linguistics
Fall 2015
Fridays: 2-4:30
Linguistics Conference Room (GFS 330)
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Office hours: by appointment

1. Course Description

This course addresses issues pertaining to experimental methods in research that deals with language(s) or the language faculty. What experimental method one might want to adopt is very much influenced by one's research goal (including one's object of inquiry) and how one would like to find out about one's subject matter. Experiments can be for the purpose of testing a definite prediction or they can be for the purpose of checking correlations of effects of various factors often by means of the significance test.

This course discusses a particular experimental method developed in Hoji 2015 as part of the methodology for language faculty as an exact science.¹ Hoji 2015 explores how we can aspire to accumulate knowledge about the language faculty in line with Feynman's "The test of all knowledge is experiment." The two pillars of the proposed methodology for language faculty science are the internalist approach advocated by Chomsky and what Richard Feynman calls the "Guess-Compute-Compare" method. Taking the internalist approach, the book is concerned with the *I-language* of an *individual* speaker. Adopting the Guess-Compute-Compare method, it aims at deducing *definite* predictions and comparing them with experimental results. It offers a conceptual articulation of how we *deduce* definite predictions about the judgments of an *individual* speaker on the basis of universal and language-particular hypotheses and how we obtain experimental results precisely in accordance with such predictions. In pursuit of rigorous testability and reproducibility, the experimental demonstration in the book is supplemented by the accompanying website (<http://www.gges.org/hojiCUP/>) which provides the details of all the Experiments discussed in the book.²

Among the issues to be addressed are:

- what could count as evidence for or against hypotheses about the language faculty
- how we can deduce *definite* and *categorical* predictions
- how we can expect to obtain experimental results in accordance with such *definite* and *categorical* predictions
- how we design experiments and interpret the experimental results in accordance with the proposed methodology for language faculty science

As a concrete illustration of our answers to these questions, we will discuss a number of on-line Experiments. We will discuss how they were designed and how their results are interpreted in accordance with the proposed methodology for language faculty science.

To place our discussion in a wider intellectual context, we will also address how the proposed methodology for language faculty science can be understood in relation to an advanced natural science such as physics, the remarks Chomsky has made over the years regarding methodology, and issues in philosophy of science.

Its emphasis on the deduction of *definite* and *categorical* predictions and on the attainment of the *categorical* experimental results makes the proposed methodology contrast sharply with research that

¹ Hoji 2015 is scheduled to be published in October 2015.

² The accompanying website and the Glossary (<http://www.gges.org/library/gges/ggesdocu/GGESongoing/HajimeHoji/HojiCUPGlossary-CUP-Website.pdf>), which will later be uploaded at the accompanying website give one a fairly good idea about the project pursued in Hoji 2015, I think.

relies crucially on the significance test. It will be illustrated, on the basis of experimental results, how crucial reliance on a statistically significant difference can lead to a conclusion quite contrary to the one we are led to by following the proposed methodology.

The on-line Experiments that we will discuss in this course are on English although the discussion in Week 9 addresses Japanese somewhat briefly. But, if there is interest, we can discuss on-line Experiments on Japanese more in depth. Since the validity of the same universal hypotheses are tested in both English Experiments and Japanese Experiments, an experimental illustration of the proposed methodology can be done either based on the English Experiments or on the Japanese Experiments.

The postings in the "Remarks" board under **Discussion**, under [44350] "Language Faculty Science" and those under [44413] "A key to language faculty science as an exact science" in the "General remarks" board at my HP (<http://www.gges.org/hoji/>) contain remarks that may be more directly revealing about my basic research orientation than what is included in Hoji 2015.

2. Weekly topics (subject to change)

Weeks	Date	Topics	Readings
1	8/28	Organizational discussion, General and initial discussion	"Cargo Cult Science" by Feynman, Chomsky's remarks in "Managua Lectures," Schütze and Sprouse. 2013
2	9/4	Methodological proposal (I)	Hoji 2015: Chs. 1 and 2
3	9/11	Methodological proposal (II)	Hoji 2015: Ch. 3
4	9/18	Experimental design (I)	Hoji 2015: Ch. 4
5	9/25	Experimental design (II)	Hoji 2015: Ch. 5
6	10/2	Experimental design (III)	"How to read various charts at this website" available at the website accompanying Hoji 2015
7	10/9	Experimental illustration (I)	Hoji 2015: Ch. 6; Ch. 7: Appendix; Gordon and Hendrick 1997
8	10/16	Experimental illustration (II)	
9	10/23	Statistics and language faculty science	Aoshima et al. 2009 "Appendix on <i>otagai</i> ," not included in Hoji 2015, but will be made available at the website
10	10/30	TBA	An abstract of the term paper due.
11	11/6	TBA	An outline of the term paper due.
12	11/13	Questions and comments, and summary discussion	
13	11/20	Summary discussion	
14	11/27	Student Presentations	A draft of the term paper due.
15	12/4	Student Presentations	

More information about what will be covered is provided below. The Glossary mentioned in

Weeks	More information re. what will be addressed
1	The general issue to be addressed include the following for a given research program: (i) What is its object of inquiry? (ii) What would constitute progress? (iii) What kind of experimental results constitute progress? (iv) What does the experiment test? (v) How are the experimental results interpreted?
2	Internalist Guess-Compute-Compare Types of judgments and types of predictions

	Working with schemata Deducing <i>definite</i> and <i>categorical</i> predictions The fundamental schematic asymmetry
3	Universal hypotheses and language particular-hypotheses The model of the Computational System of the language faculty —LF and Merge, —The LF c-command as the most basic and universally available structural relation underlying meaning Ueyama's (2010) model of judgment-making Dependency interpretation Guess-Deduce-Compare
4	Obtaining <i>definite</i> and <i>categorical</i> experimental results Main-Hypotheses and Sub-Hypotheses Main-Experiment and Sub-Experiments Informant classification
5	The fundamental schematic asymmetry Predicted schematic asymmetries Confirmed predicted schematic asymmetries Schema groups and lexical groups Schema A, Schema B, and Schema C Experiment-Registration Test types Interpreting results
6	"How to read various charts at this website"
7	Main-Experiment on the structural hypotheses on FD; EPSA [31]-4 Sub-Experiments Across-occasion reproducibility and informant classification
8	^{ok} Schema-based predictions Main-Experiments on the LF-c-command condition on FD The internalist approach and bridging hypotheses
9	Confirmed predicted schematic asymmetries and statistically significant contrasts
10	Hoji 2015: Glossary and the Glossary at the website
11	
12	The Q/A session and remarks as a form of summary
13	The discussion addresses various issues based on the submitted draft of the outline of the term paper, and the questions and comments raised throughout the semester.
14	
15	

2.1.1. Course requirements (subject to modification)

2.2. Term paper

You must submit a terms paper at the end of the semester.

The possible topics for your term paper can be any of the following, any combination of the following or some other issues, upon consultation with the instructor:

—Your assessment of the experimental method that you adopt and follow in your own research: Be sure to address (i) the goal of the research program as you understand it, (ii) what you think would constitute progress, (iii) how the experimental method you adopted is meant to help achieve the goal and help you make progress

—Remarks on the debate about the use of informant judgments, as addressed in the papers in *The British Journal of Philosophy of Science*

—Remarks (and questions) on the experimental method for language faculty science proposed in Hoji 2015

2.3. Abstract, outline and the draft of the term paper

An abstract, an outline and a draft of the terms paper are due as indicated under "Remarks" in the Weekly topics chart.

2.4. Questions and comments

You are strongly encouraged to send me questions and comments on the lecture, readings, etc. throughout the semester, in addition to raising them in class.

3. References

- Aoshima, Sachiko, Masaya Yoshida, and Collin Phillips. 2009. "Incremental Processing of Coreference and Binding in Japanese," *Syntax* 12.2: 93-134.
- Chomsky, Noam. 1988. *Language and Problems of Knowledge: The Managua Lectures*, MIT Press, Cambridge, MA.
- Cowart, Wayne. 1997. *Experimental syntax: applying objective methods to sentence judgments*. Thousand Oaks, London, New Delhi: Sage Publications.
- Devitt, Michael. 2006. Intuitions in linguistics. *The British Journal for the Philosophy of Science* 57: 481-513.
- Duhem, Pierre. 1906/1954. *The aim and structure of physical theory*. Princeton: Princeton University Press. (The original publication in French in 1906, its original English translation in 1954, and its renewed edition in 1982.)
- Feynman, Richard. 1963. *Six Easy Pieces*, Basic Books, New York.
- Feynman, Richard. 1965/1994. *The character of physical law*, The Modern Library, New York. (The page references are to the 1994 edition.)
- Feynman, Richard. 1974. Cargo cult science. 1974 Caltech commencement address, reproduced in Feynman (1997, 338-346).
- Feynman, Richard. 1997. *Surely you're joking, Mr. Feynman!*. New York: Norton & Company.
- Feynman, Richard. 1999. *The Pleasure of Finding Things Out*, Basic Books, New York.
- Feynman, Richard, Robert Leighton, Matthew Sands. 1963. *The Feynman Lectures on Physics* Volume 1, Addison-Wesley Publishing Company, Reading, Mass.
- Fitzgerald, Gareth. 2010. Linguistic intuitions. *The British Journal for the Philosophy of Science* 61:123-160.
- Gordon, Peter C. and Randall Hendrick. 1997. "Intuitive knowledge of linguistic co-reference," *Cognition* 62: 325–370.
- Hoji, Hajime. 2010. "Hypothesis testing in generative grammar: Evaluations of predicted schematic asymmetries," *Journal of Japanese Linguistics* V. 16: *Special issue: In Memory of S.-Y. Kuroda*, pp. 25-52.
- Hoji, Hajime. 2015. *Language Faculty Science*, Cambridge University Press.
- Lakatos, Imre. 1970. "Falsification and methodology of scientific research programmes," In: Lakatos, Imre and Musgrave, Alan (eds.), *Criticism and the growth of knowledge*, 91-195. Cambridge: Cambridge University Press. Reprinted as Lakatos (1978: chapter 1).
- Lakatos, Imre. 1973. Science and pseudoscience. Included in Lakatos (1978: 1-7) as "Introduction: Science and pseudoscience." (The page references are to Lakatos (1978). The transcript can be obtained at <http://www.lse.ac.uk/collections/lakatos/Default.htm>.)
- Lakatos, Imre. 1978. *The methodology of scientific research programmes*. Philosophical papers volume 1 (Worrall, John and Currie, Gregory (eds.)) Cambridge: Cambridge University Press.
- Lappin, Shalom, Robert D. Lavine, and David E. Johnson (2000a) "Topic ... Comment," *Natural Language & Linguistic Theory*, 18.3, 665-671.

- Lappin, Shalom, Robert D. Levine, and David E. Johnson (2000b) "The Revolution Confused: A Response To Our Critics," *Natural Language & Linguistic Theory*, 18.4, 873-890.
- Lappin, Shalom, Robert D. Levine, and David E. Johnson (2001) "The Revolution Maximally Confused," *Natural Language & Linguistic Theory*, 19.4, 901-919.
- Lasnik, Howard. 1990. "Syntax," in D. N. Osherson and H. Lasnik eds., *Language: An Invitation to Cognitive Science Volume 1*, A Bradford Book, The MIT Press, Cambridge, pp. 5-21.
- Ludlow, Peter. 2011. *The Philosophy of Generative Linguistics*. Oxford University Press, New York.
- Meehl, E. Paul. 1967. "Theory testing in psychology and physics: a methodological paradox," *Philosophy of Science* 34: 103-115. (Reprinted in Morrison and Henkel 1970/2007. The page reference is to Morrison and Henkel 1970/2007.)
- Morrison, E. Denton and Henkel, E. Ramon. (eds.) 1970/2007. *The significance test controversy*, Transaction Publishers, New Brunswick, N.J.
- Podesva, Robert J. and Devyani Sharma. (eds.) 2013. *Research Methods in Linguistics*, Cambridge University Press, Cambridge.
- Poincaré, Henri. 1952. *Science and hypothesis*. New York: Dover Publications. (The English translation of *La science et l'hypothèses* (1902).)
- Popper, Karl. 1963. "Science: Problems, aims, responsibilities," *Federation Proceedings* (Baltimore), *Federations of American Societies of Experimental Biology* 22.4: 961-972.
- Schütze, Carson. 1996. *The empirical base of linguistics: Grammaticality judgments and linguistic methodology*, University of Chicago Press, Chicago.
- Schütze, Carson and Jon Sprouse. 2013. "Judgment data," in Robert J. Podesva and Devyani Sharma, eds., *Research Methods in Linguistics*, Cambridge University Press, Cambridge, 27-50.
- Sprouse, Jon. 2007. Continuous acceptability, categorical grammaticality, and experimental syntax, *Biolinguistics* 1: 123-134.
- Ueyama, Ayumi. 2010. "Model of judgment making and hypotheses in generative grammar," In: Iwasaki, Shoichi; Hoji, Hajime; Clancy, Patricia; and Sohn, Sung-Ock (eds.), *Japanese/Korean Linguistics* 17, CSLI, Stanford, CA: 27-47. (Available at: <http://www.gges.org/hoji/research/hp-Ayumi.cgi>).