The Phonology, Phonetics, Computation, and Cognition Research Group

Motivation

I wanted to start off by providing a little bit of background and motivation for this group. All of you here know me in some capacity and have heard me talk about my interests and why I do research on the things that I do, but I thought having some stuff down in print would help solidify the long term goals of this group. The following quote from Chabot (to appear) actually sums up a lot of my views nicely:

> *Theories of phonological knowledge must, to some degree, abstract away from purely observable phenomena in order to make claims and provide explanation for general principles characterizing those phenomena. There is a tension inherent in that abstraction, since phonological knowledge seems so often to be isomorphic*[1] *with substantive phonetic descriptions. This suggests that phonological theory is, to some degree, about physiological facts inherent in the production and perception of sound, but the necessity for some abstraction opens up the logical possibility that phonology is entirely abstract. A critical aspect of any theory of phonology is determining exactly to what extent substantive properties constitute data that is within its remit, and what constitutes an explanation for the patterns in that data.*[2]

I am primarily interested in the formal relationship between phonological and phonetic knowledge. I consider myself to be a theoretical phonologist, but I think figuring out where the demarcation lies between the two types of knowledge is a necessary precursore to doing any impactful work in the theoretical domain. This is not the only topic we will cover in this group, but this relationship is **the big question** that I plan to work on throughout my career. I'm hoping that a majority of the work that emerges from this group can help address this question in some way. In general, when I say "phonetics" I usually mean something like language *performance* which encompasses a lot of things beyond just implementing/parsing phonetic structures. So there is a lot of wiggle room for projects that answer the big question in various ways.

[1] An *isomorphism* is a structure-preserving mapping between two structures.

[2] This last line can be related to terms in the philosophy of science. The *explanandum* is the phenomenon that needs to be explained and the *explanans* are the explanation of the phenomenon. For our purposes, we are trying to figure out whether certain phonetic data should be the thing that needs to be explained or the explanation itself.

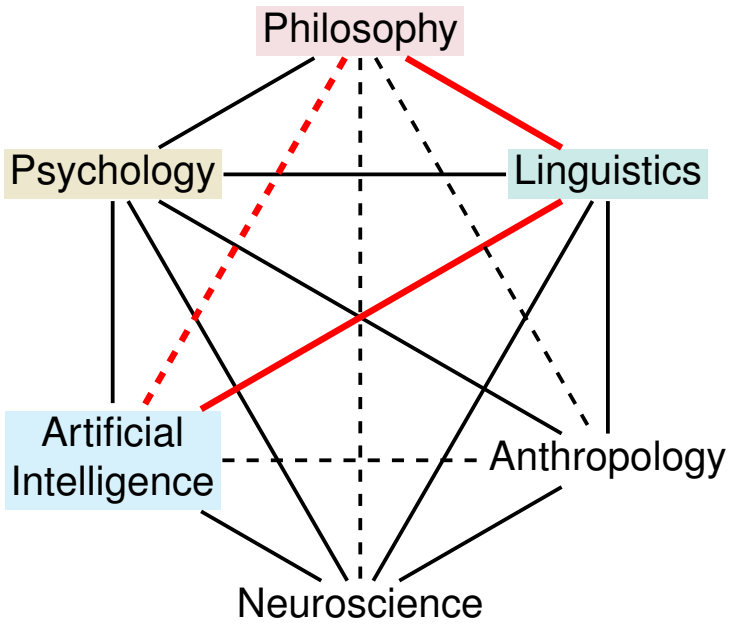
Computation and Cognition

You may be asking, how do computation and cognition come into play? These both reflect the way that I was trained to think about problems in linguistics more broadly. The type of *computation* that I'm interested does not involve using computers to do research, but rather thinking about the mind directly as a computing machine.

Computational Theory of Mind - the mind itself is a computing system.

Classical Computational Theory of Mind - the mind is a computing system that is most accurately described as a Turing Machine and mental operations are best described as computations that can be carried out on a Turing Machine.

This central focus on the *mind* is why I consider what I do to be part of cognitive science. At some level, the claims that are being made are claims about what exactly the mind is doing. Of course, some abstraction is invovlved, but the general idea is that what's going on can be explained as a computation. Furthermore, I'm quite interested in neighboring fields as well. The figure below was made to show how Cognitive Science as a field was really coming together of different fields. I have highlighted the four fields that related to my own work and included red lines for the topics I'm specifically most interested in.



Situating phonology and phonetics in to this larger picture of computation and cognition is a driving force behind my research.

Places to find relevant research

It's good to stay up to date with what is going. You don't need to read literally everything, but it's good to at least check in with what's going on from time to time. The sources below are a useful starting point for work related to the group.

Online Repositories

Preprints/etc.

- *LingBuzz*: `https://lingbuzz.net`
- *Rutgers Optimality Archive*: `https://roa.rutgers.edu`
- *The Logical Phonology Archive*: `https://wellformedness.com/loa/`
- *Arxiv*: `https://arxiv.org`
- *PsyArxiv*: `https://osf.io/preprints/psyarxiv`

Encyclopedias

- *Stanford Encyclopedia of Philosophy*: `https://plato.stanford.edu`
- *Internet Encyclopedia of Philosophy*: `https://iep.utm.edu`
- *Open Encyclopedia of Cogntive Science*: `https://oecs.mit.edu`
- *Oxford Research Encyclopedia of Linguistics*: `https://oxfordre.com/linguistics/`

Journals

Phonology

- *Phonology*: `https://www.cambridge.org/core/journals/phonology`
- *Phonological Data and Analysis*: `https://phondata.org/index.php/pda`
- *Laboratory Phonology*: `https://phondata.org/index.php/pda`
- *Radical*: `https://radical.cnrs.fr`

Phonetics

- *Journal of Phonetics*: https://www.sciencedirect.com/journal/journal-of-phonetics
- *Journal of the Acoustic Society of America*: https://pubs.aip.org/asa/jasa
- *Journal of the International Phonetic Association*: https://www.cambridge.org/core/journals/journal-of-the-international-phonetic-association

General Linguistics

- *Language*: https://languagelsa.org/index.php/language
- *Glossa*: https://www.glossa-journal.org
- *Linguistic Inquiry*: https://direct.mit.edu/ling
- *Journal of Linguistics*: https://www.cambridge.org/core/journals/journal-of-linguistics

Math/Comp Linguistics

- *Computational Linguistics*: https://direct.mit.edu/coli
- *Journal of Language Modeling*: https://jlm.ipipan.waw.pl/index.php/JLM
- *Journal of Logic, Language, and Information*: https://link.springer.com/journal/10849
- *SCiL Proceedings*: https://aclanthology.org/venues/scil/
- *MoL Proceedings*: https://aclanthology.org/sigs/sigmol/
- *SIGMORPHON Proceedings*: https://aclanthology.org/sigs/sigmorphon/

CogSci/Psycholing

- *Cognition*: https://www.sciencedirect.com/journal/cognition
- *Cognitive Science*: https://onlinelibrary.wiley.com/journal/15516709
- *Journal of Memory and Language*: https://www.sciencedirect.com/journal/journal-of-memory
- *Computational Brain and Behavior*: https://link.springer.com/journal/42113
- *Behavioral and Brain Sciences*: https://www.cambridge.org/core/journals/behavioral-and-bra
- *Psychonomic Bulletin and Review*: https://link.springer.com/journal/13423
- *Glossa Psycholinguistics*: https://escholarship.org/uc/glossapsycholinguistics

Philosophy of Mind

- *Philosphy and the Mind Sciences*: `https://philosophymindscience.org`
- *Mind & Language*: `https://onlinelibrary.wiley.com/journal/14680017`
- *MIND*: `https://academic.oup.com/mind`

References

Chabot, A. (to appear). What phonology is and why it should be. In Dupre, G., Nefdt, R., and Stanton, K., editors, *The Oxford Handbook on the Philosophy of Linguistics*. Oxford University Press.