

Maryland Language Science IGERT: 5 year progress report (2008-2013)

Goals

1. Create model of interdisciplinary student training
2. Catalyze broader language science community
3. Make it sustainable
4. Make it a local and national model

Main Lessons

- Interdisciplinary training requires much more than broad coursework and exposure to diverse ideas and skills.
- Biggest impact: student ownership of program activities
- Training should prepare for lifelong adaptability
- Training should prepare entrepreneurial scientists
- Old dogs learn new tricks slowly: students change fastest, new faculty next, established faculty slowest
- Regular formative assessment really works
- Culture change can happen, but not overnight

Students

- 50 PhD students pursued full program
- 30+ other PhD students benefited from program
- Students drawn from 10 departments & programs

Faculty

- 50 faculty contributed to program, as mentors, course instructors, workshop leaders, research team leaders, rotation supervisors, etc.
- 12 new language science faculty since 2008; interdisciplinary community played key role in recruiting them.

Departments & Centers

- Computer Science (CMNS)
- Electrical Engineering (ENGR)
- Hearing & Speech Sciences (BSOS)
- Human Development (EDUC)
- iSchool
- Linguistics (ARHU)
- Neuroscience & Cognitive Science (BSOS)
- Philosophy (ARHU)
- Psychology (BSOS)
- Second Language Acquisition (ARHU)
- Center for Advanced Study of Language (VPR)
- UMIACS (CMNS)
- Maryland Neuroimaging Center (BSOS)

Courses

- 12 interdisciplinary seminars 2009-2013
... and many regular courses that 'stretch' students
- Students take ave. 15 courses; 5 outside home dept.
- Courses routinely take students outside 'comfort zone'

Activities

- Research rotations for advanced students (enhancing integrated research, not 'shopping around')
- Winter Storm (5x): intensive 2-week workshop with:
 - Research planning workshops
 - Student-led technical courses
 - Daily faculty lunch talks
 - Professional development workshops
 - 'Science is social' events
- Language Science Day (3x): 175 researchers in 2012
- Outreach Program: many annual events benefiting hundreds of K-12 students and community members
- Weekly student lunch talks to interdisciplinary audience
- Student 'apprentices' develop detailed proposal in Year 1

Recruitment, Retention, & Placement

- Students from 2008, 2009 cohorts now graduating
- 4 offered Tenure Track positions
- Postdocs in Harvard, Illinois, Haskins/Yale, UC San Diego, McGill, Paris, San Sebastian, CASL, UMD
- Strong recruiting classes, BUT ...
- Applicant pools saw limited impact; changes are slow
- Insufficient visibility of broad opportunities at UMD
- Most departments & programs do not highlight benefits

Recognition & Awards

- 5 Flagship Fellows (UMD)
- 3 NSF Graduate Research Fellowships
- 4 Distinguished Graduate Student Service awards
- 3 NSF Dissertation Improvement Grants
- Many Best Paper awards at conferences

Assessment & Improvement

- 5 focus groups, 15+ surveys & reports
- Partnered with IRPA, but gradually took on greater ownership of assessment process
- 500+ pages of NSF reports
- 4 visits of external advisory board (2010-2013)
- Constant process of evaluation and change

Sustainability

- Program created irreversible culture change ("this toothpaste won't go back into the tube")
- *Language Science Fellows* program in development
- Maryland Language Science Center in development

More Information

<http://languagescience.umd.edu>

Program director: Colin Phillips, colin@umd.edu

Program coordinator: Csilla Kajtar, ckajtar@umd.edu

Students

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Kevin Donaldson (NACS/ECE)†
Alex Drummond (LING)
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Julie Gerard (LING)
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Alvin Grissom (iSchool)
Quinn Harr (PHIL)*
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Angela He (LING)
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Candise Lin (HDQM)†
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Joshua Riley (LING)†
Brendan Ritchie (PHIL)*
Zoe Schlueter (LING)

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Katya Solovyeva (SLA)
Irina Stojanovska (SLA)
Megan Sutton (LING)†
Yuichi Suzuki (SLA)
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Aaron White (LING)†

Contributing Faculty

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Kira Gor (SLA)
Matt Goupell (HESP)
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Andrea Zukowski (LING)

Winter Storm 2013

1/7/2013 -
1/18/2013

UNIVERSITY OF
MARYLAND

Language Analysis Workshop: student teams work on uncovering the structure of Zazaki Kurdish, a language they had never encountered before.



Brief Summary

What is Winter Storm?

Winter Storm is a two-week intensive workshop in Language Science intended to help attendees build professional skills, explore new avenues of research, and make new interdisciplinary partnerships.

Student-led initiative

The event is a student-led initiative by University of Maryland's NSF IGERT program in biological and computational foundations of language. 52 students and faculty from 12 different departments and centers volunteered their time to lead different elements of Winter Storm. This year, Winter Storm

attracted over 100 participants from a variety of backgrounds: 14 departments & research centers and 5 colleges were represented.



Language Science students listening to a faculty lunch talk

5th year of this experiment!

This year we celebrated the 5th anniversary of the Winter Storm workshop. Leveraging past successes and lessons learned from past

mistakes, this year's workshop was particularly successful in creating an interdisciplinary forum for community building and research advancement. There is overwhelming demand among participants for continuing this workshop in the future as a project of the campus-wide Language Science community.



Students enjoying one of Professional Development sessions



Winter Storm is sponsored by: IGERT: Biological and Computational Foundations of Language Diversity, UMIACS: University of Maryland Institute for Advanced Computer Studies, Department of Linguistics

Winter Storm made possible by: volunteer teachers and organizers from UMIACS, SLA, PSYCH, HESP, HDQM, CMSC, PHIL, MNC, LING, iSchool, NACS, CASL

Highlights this year

Language Analysis Workshop

Figuring out the properties of an entirely unfamiliar language can teach us a lot about the languages that we already know. Participants in the Language Analysis Workshop (new in 2013) worked intensively in teams to uncover the structure of Zazaki Kurdish. The event was very well received; the survey conducted after Winter Storm showed strong demand for similar events in the future.



Tess Wood (HESP) and Dustin Chacon (LING) introducing the workshop with our Zazaki language consultant.

Python Crash Course

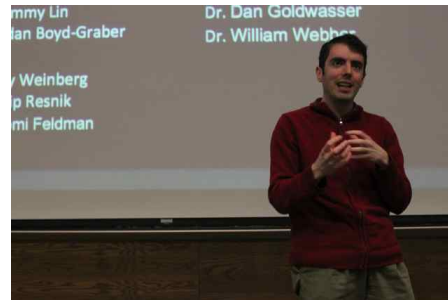
UMIACS and Linguistics students co-taught a series of five Python programming workshops designed to cultivate introductory technical skills necessary for a range of computational language science applications ranging from experiment log analysis to statistical analysis of results.



Raul Guerra (UMIACS) leads a Python course

Lab Presentations

Lab Presentation day afforded an opportunity for lab groups and research centers from across campus to present some of their research and promote opportunities for students and faculty to get involved.



Jordan Boyd-Graber (UMIACS, iSchool) presenting work on Bayesian inference on behalf of the CLIP lab.



Meredith Rowe (EDHD) presents her group's research on child-parent interaction.

Special Interest Groups

Students and faculties led eight Special Interest Groups this year. Intended as a structured opportunity for participants to explore research techniques with peers from other disciplines, each group focused on composing rough research plans to be carried out after Winter Storm.



Special interest group on critical period in second language acquisition led by Yuichi Suzuki (SLA) and Alison Shell (PSYCH).



Special interest group on working memory in sentence production led by Bob Slevc (PSYCH) and Shota Momma (LING).

Activities this year

Language Analysis Workshop

An interdisciplinary, hands-on workshop in describing an under-documented language

Professional Development Series

Career preparation sessions on grant funding opportunities, alternative career directions, and PhD planning

Special Interest Groups

Research planning workshops, for jump-starting collaborative projects

Python Crash Course

Build skills in the leading scripting/programming language

Mechanical Turk Session

New on-line tools for ultra-fast data collection

Advanced Analysis with R

Topic: Mixed effects model

Lab Presentations

Overviews of research opportunities across the university

Faculty Lunch Talks

Every day featured a faculty speaker sharing an in-depth look at their research

Presentations Day

Short presentations given by Research Interest Groups and Language

UMD Language Science community

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Winter Storm committee

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For more information

Language Science community

<http://languagescience.umd.edu>

Language Science wiki

<http://www.languagescience.umd.edu/wiki/Home>



Language Science Day 2012

Sept. 14th, University of Maryland languagescience.umd.edu

Language Science Day (LSD), held early in each academic year, is the kick-off event of the year's language science activities, bringing together students and faculty from a campus-wide community, showcasing ongoing projects from various disciplines, facilitating networking among participants, and improving awareness of research and training opportunities at the University of Maryland. This year's LSD, as the third annual event, brought together over 175 language science researchers, a 15% increase from last year, from 18 departments and UMD-affiliated institutions, to exchange ideas in the form of student and faculty presentations followed by a research fair. Networking activities continued during a lunch buffet and a dinner social for 100 people at a nearby faculty home. The 2012 LSD was the most widely attended and successful event to date.

Participant Affiliations

Department of Computer Science	Center for Advanced Study of Language
Department of Hearing and Speech Sciences	Department of Electrical and Computer Engineering
Department of Human Development and Quant. Methodology	NSF IGERT Program in Language Science
Department of Teaching and Learning, Policy and Leadership	Department of Anthropology
Neuroscience and Cognitive Science Program	School of Languages, Literatures, and Cultures
Department of Philosophy	iSchool
Department of Psychology	UMIACS
Second Language Acquisition Program	Department of English
Department of Linguistics	

The event opened with a networking lunch buffet, accompanied by slides that highlighted language science events and activities, recent awards, and student and faculty publications. Colin Philips gave an overview of the year's activities, and a summary of progress towards community-wide goals. During lunch, participants joined 'topic corner' discussion areas, providing an opportunity to interact with researchers with similar interests. After lunch, a series of brief faculty presentations highlighted interdisciplinary research opportunities and links between basic science and real-world problems. An excellent series of student presentations shared personal experiences and best practices for getting involved in interdisciplinary research, and for building cross-field student research communities, such as the highly successful PHLING network.



After the presentations, two research fair sessions engaged participants in a more interactive way. Representatives from 28 groups and/or laboratories presented ongoing work on a large range of language-related topics, including theoretical research, experimental studies, computer/mathematical modeling, clinical applications, etc. Instead of recycling posters from disciplinary meetings, teams developed broadly accessible summaries that explained their combined work to non-specialists. Funding for the event came from 11 participating departments, programs, and centers, as well as a sponsorship from the Graduate Student Government. Participants felt energized by the day's activities and the growing strength of the community, and LSD is now firmly established in the annual calendar.

Language Science IGERT Advisory Board Meeting Report 2013

Executive Summary

- 5 years of IGERT program has led to dramatic change and improvement, in students and beyond
- The ramp-down of NSF-IGERT funding will inevitably impact available student time and the overall number of students who can be supported. It is critical that current momentum not be lost.
- The meeting converged on an approach that aims to sustain the model program that students and faculty have developed; it is just now starting to obtain national visibility; its best features should be continued
- Recommendations focused on developing a *Language Science Center Fellows* model; and on how to ensure its success via specific commitments from students, faculty and departments. Regular formative assessment should continue to be a key element of the program/Center.
- Funding priorities: (i) IGERT program activities & seed funds; (ii) new faculty in areas critical to Center, who will be committed to broad enterprise; (iii) restoring fellowship support, variously

Advisory Board Report

These recommendations are a lightly edited version of verbal remarks delivered at the end of the meeting on 5/10/13, led by Mitch Marcus, but with further discussion added by other advisory board members.

Advisory Board	Susan Gass (Disting. Univ. Prof., Michigan State U., Second Lang. Acquisition) Alec Marantz (Prof. & Chair, NYU, Linguistics and Psychology) Mitch Marcus (Prof., U of Pennsylvania, Computer Science) Mabel Rice (Disting. Univ. Prof., U of Kansas, Speech, Language & Hearing Sci.) Paul Smolensky (Prof., Johns Hopkins U., Cognitive Science)
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"The first thing to say is that it is truly remarkable what the faculty and students have done over the course of this IGERT in evolving a program that really works well. I don't know how many of you were here when we started our visits: the program was not perfect, it had bugs; but you worked on fixing them, and more and more of them got fixed each year. Things are now quite different than they were 3-4 years ago. The level of collaboration has evolved into something that really works very well. Students seem to be getting a really strong interdisciplinary education. They have a real sense of a community that they belong to, and they want to see it continue, as do the faculty. You are all to be congratulated for having built a model that works so well.

"We took it as our task to answer the following question: assuming that the Language Science Center will come to exist, and that there will be sufficient funding to cover ongoing program activities, but not student stipends, then what should be done? At the lunch meeting the students were pretty clear in their answer. They want to 'opt in' to something that then forces them to do a lot of work. They want to opt in to a community in which everybody else is committed to working similarly hard, with shared goals. The question going forward is: what should be different from what you have now? The answer seems to be: not much. Except that there won't be dedicated stipends.

"An obvious question then is: what do students get in return for opting in? Answer: to be fellows of the Language Science Center. The alternative idea of a certificate program provides little incentive for some key groups to opt in (such as the linguists) [*ed: in fact, our survey data indicates that this concern is not specific to one group or department*]. But how can this work without dedicated stipends for participants? Here's how it might work. Most students have faculty advisors who are affiliated with the

IGERT program. For one reason or another those faculty are strongly enough committed to interdisciplinary education that they think that it is worthwhile for students to spend a year of their lives to support the students' goals and to support their own goals. You have evolved a community of faculty that are committed to this, and that is crucial to its success.

"There needs to also be a mechanism for students to get involved whose advisors don't opt in with the same level of commitment. So there should not only be fellows, but also affiliates. Maybe the cost of being an affiliate should be that a student serves on just one committee.

"Similarly, it seems to us that there really ought to be similar membership levels for faculty: some will be members of the Center, others will be affiliates. The assumption is that most students who will be fellows will have faculty advisors who themselves are members of the center. This could help to provide a stable community.

"Finally, it seems very important to provide mechanisms for faculty to teach joint courses. We heard the IRPA representatives say that students value the double perspective that they get when two or more faculty members are teaching a course. And when two faculty members are there, it seems that this induces other faculty to sit in too, adding further value. You should provide these and other motivations to those in the administration whose support is needed for such joint teaching arrangements."

[Sue Gass] Although the Fellows model received more support, you should not simply discard the idea of a Certificate program. A number of people thought that it could be useful.

[Alec Marantz] One aspect of the transition to post-IGERT structures should be emphasized. In deciding that the 'IGERT program' should continue, you should also commit to continuing your efforts in best practices for successful graduate training. This goes well beyond interdisciplinarity, and includes the various mechanics that you have put into place. Those are important to your success and they should not be abandoned. For example, you have created extensive mechanisms for student self-evaluation. You expect first and second year graduate students to project plans through to the end of their studies. Mechanisms like this are models for graduate education, and enforcing them makes an enormous contribution towards ensuring that students will finish on time and be happy about their research. Part of the reason why we are recommending the model that you have created is that it is a really good model for graduate education, not just for interdisciplinarity.

[Paul Smolensky] I would like to reiterate a couple of points. From my perspective as director of another language-focused IGERT I am quite astounded by the extent of commitment, contribution, and engagement that you have here. You have built something remarkable. You have built structures here that need to be preserved. All day long I have been trying to find a reason why continuing to do what you're doing now without NSF funding would be somehow problematic, but there just doesn't seem to be a good reason.

To summarize what we see as the model going forward. There should be an ongoing program. Students in it would be Language Science Fellows or Affiliates. Faculty members would be members of the program or affiliates. The only reward for students would be that they can include this on their CV. But the benefits are more than this: they include sustaining a community that provides many opportunities for collaborative research, and that provides a vibrant environment that spans the entire university (it's an amazing community.) The commitments of being a member would be similar to what they are now, to ensure sustainment of activities, to provide services to the community. Membership would provide

some opportunities for funding for travel, research expenses, etc. The rewards for faculty would be being in this community, having their students involved, and reinforcing the community by being involved themselves. In addition, you should do whatever it takes to ensure that the interdisciplinary seminars can continue.

In order to engage those communities that have been less involved, it seems that efforts should be focused on hiring more people who will be active in the community, rather than on trying to engage people who are perfectly happy on their own. Push for faculty positions that will strengthen your faculty in areas where you currently need more strength. Place the next priority on funds for restoring fellowship opportunities. There's no reason why that shouldn't continue to bring benefits that you've worked so hard to put in place already.

[Alec Marantz] The model of using stipends to buy commitment from students whose supervisors are lukewarm about the program doesn't appear to have worked well. So it is not clear that it is worthwhile to worry about that approach. The key faculty are committed anyway.

[Mitch Marcus] One way of viewing our advice is as follows: we are telling you that there is a perfect model for what you should be doing going forward – it's the model that the people at the University of Maryland have created.

[Bill Idsardi] There is a concern that we should not be left with just the changes that have already happened. I don't think we've reached the ideal yet, and I'm concerned that we should maintain mechanisms for keeping things fluid, changeable.

[Sue Gass] Agreed. You have a culture here that is conducive to change, and you should continue to constantly look for ways to make things better, and to respond to problems as they arise.

[Paul Smolensky] One thing that you'll be losing is the structure and focus that came from the fact that this was part of an NSF grant. It provided an incentive. You need to take steps to prevent this from dissolving.

[Mitch Marcus] Yes, this structure has provided an incentive, as has activities such as these annual meetings. I think that the most valuable thing about our visits has been that once a year you sit down as a community, with us in the middle, and then we reflect back what you already know.

[Paul Smolensky] Yes, a regular review mechanism provides a kind of replacement for the structure that NSF imposes. It forces you to make certain things a priority.

[Colin Phillips] We certainly plan to continue regular assessment and advisory board meetings. But one thing that we have not discussed is whether to combine the regular assessment of the training program with the assessment for the Language Science Center, or whether to treat them as separate goals.

[Mitch Marcus] Keep them separate. It's important that the students take a central role in this process, and that is harder to achieve in the context of a larger assessment.

[Paul Smolensky] The fellows program should need separate evaluation. (And it should also be separately endowable.)

Additional Notes from Language Science Faculty meeting (lunchtime)

- In a new program, we need to strike a careful balance between inclusivity and exclusivity – student and faculty commitment is contingent on the commitment of others, but this should not erect barriers.

- It is important that participation in the fellows program allow students to gain recognition and 'prestige'.
- Flexibility in the new program should allow for (i) hosting of more specialized training grants, e.g., via NIH, Education; (ii) accommodation of differing constraints from departmental programs
- What mechanisms will continue to provide students with motivations to push beyond their comfort zone?
- Issues of funding sources seem to be more of a faculty concern than a student concern
- The application process is challenging yet valuable. We need to ensure that the benefits outweigh the burden, and that students recognize the value (one faculty member: "Writing grants is one of the most valuable things that I do – but it's painful, and I wouldn't do it if I wasn't pushed."). There will be more flexibility in the timing of the application process if it's not tied to stipends. Some discussion of pros/cons of staging the process. Faculty commented on the value of the application process for fostering 'co-mentoring'.
- Research rotations and the opportunity to collaborate broadly should be viewed as an opportunity and a reward, not as a burden.