

# Report on URep Activities (2008-09)

May 20, 2009

## 1 Introduction

Unbounded Representation (URep) is a graduate student group within the UC Berkeley Department of Mathematics that promotes dialogue about the different kinds of diversity in the math community. To our knowledge, we are the only such student group in a math department. One of our goals is to assess the diversity-related climate of the math graduate student program. Another goal is to develop programs that support math graduate students who come from traditionally underrepresented groups, as well as the wider community of math graduate students. In this report, we highlight our 2008-09 activities.

URep began after a discussion on diversity in the math department in September 2008. Since then, we have held weekly meetings and planned various activities in the department in which we often coordinate with other student groups MGSA (Mathematics Graduate Students Association), NRing (Noetherian Ring), and MUSA (Math Undergraduate Student Association). We aim to make our activities more self-sustaining in future years, and we cite the example of the twice-yearly Prelim exam workshops that were initiated by NRing, and have since been taken over by and funded entirely by the department. Many of URep's activities this year have been funded and supported by Department of Mathematics and by the UC Berkeley Office of the Vice Chancellor for Equity and Inclusion.

## 2 Ongoing activities

### 2.1 Critical points

Critical points provides a space for ongoing, informal conversation among students, staff, and faculty about issues of diversity in our department and in the larger mathematics community. The main goal is to spark conversations so that we can raise awareness and, over the long-term, shift the culture.

We meet approximately every 2-3 weeks throughout the semester. The Office for Equity and Inclusion funds the purchase of pizza and soda. Typically there are 8 to 17 participants, with a mix of regulars and first-timers. Although the main participants have been graduate students, the event frequently draws staff, faculty, and undergrads.

Some of the topics we have dealt with include the following:

- stereotype threat and the performance of women and underrepresented minorities in mathematics,
- balancing professional life with family life, challenges and prospects in getting more diversity at the undergraduate level,

- nature vs. nurture in mathematics ability,
- national trends on women and underrepresented minorities in mathematics, and
- action plans for building a more supportive community among math graduate students and undergraduate students.

In the future we will aim to get a broader selection of graduate students to provide topic ideas and to participate, as well as more regular involvement from faculty.

The website for Critical points is <http://math.berkeley.edu/~urep/critical.html>.

## 2.2 Career talks

Career Talks is a monthly lunch seminar exploring life after receiving a Math Ph.D. Speakers discuss their career path, share any advice they might have, and answer questions. The format is an informal seminar (over lunch) in which the speakers outline their careers (in 5 to 15 minutes), aiming their talks at grad students of all years. Following the brief talk, the remaining time is used for a question and answer session. Possible topics of discussion include the following: advice for grad school or applying for jobs, “things I wish I’d known,” difficulties encountered, and balancing work with one’s personal life.

This panel was motivated by an NRing lunch held in September 2008 in which Dorothy Buck, Diane MacLagan, and Monica Vazirani shared their experiences and advice regarding graduate school, postdocs, fellowships, and succeeding as a young faculty member. Our aim was to allow more graduate students to hear career advice in an informal setting.

This year, we have had two panels featuring individuals in academia (including California State Universities), one panel on careers in finance, and one panel on careers in biotechnology. We choose speakers at various stages in the career, and we intend to continue to showcase individuals from industry and in academia.

Funding for snacks provided at these career panels and for lunches for the speakers, is provided by the Office of Equity and Inclusion.

The website for Career talks is <http://math.berkeley.edu/~urep/career.html>.

## 2.3 MathSpace

MathSpace began in April 2009. Every Thursday evening, a group of graduate students meets in Evans 1015 to talk to undergraduates. The main goal is to build a more cohesive community among all students at UC Berkeley who are interested in mathematics. MathSpace facilitates this by providing a time and space designated for people to come together and discuss topics such as advice for grad school or classes, different areas of research, or other fun math problems we enjoy.

Undergraduate math majors can meet and share advice and experiences among themselves. Similarly, the graduate students go out for dinner (typically pizza and beer), which serves both as an incentive for graduate participation and gives graduate students from different years and interests a chance to meet and talk. These gatherings also help create a unified math community, bringing together people with similar interests who otherwise would not interact.

Currently, funding for MathSpace is provided by the math department.

## 2.4 Colloquium speakers

In coordination with the Office of Equity and Inclusion and with the colloquium chair Ken Ribet, URep helped coordinate the invitation of two minority speakers to give colloquia in the math

department. The primary aim is to improve minority representation among colloquium speakers.

**Activities with the speaker:** One of the aims of this effort is to allow faculty and students to interact with a mathematician from a non-standard background. Both speakers took part in informal discussions with students over lunch or tea.

Funding was provided by faculty grants and the Office of Equity and Inclusion.

## 2.5 Friday teas

The student-run Friday teas grew out of a URep discussion in December 2008. These are run by MGSA.

## 2.6 Website

URep has created a website (<http://math.berkeley.edu/~urep>), hosted on the department's server. The site grew out of our need to publicize URep events, as well as URep's vision of promoting issues of diversity in mathematics more widely. Currently, the website serves the following purposes:

1. Advertising upcoming URep events;
2. Chronicling past URep events;
3. Publicizing information pertinent to diversity in education.

We are still working to expand the website. Our "wish list" of future projects includes:

1. Providing resources for prospective students in the form of profiles or stories of graduate students in the department;
2. Compiling profiles of outstanding mathematicians who are women and people of color.

We hope the student profiles will help to present the department as a welcoming place with students who are "real people," thereby encouraging more students to consider applying for the graduate program. Also, we hope that the profiles of mathematicians will both inspire current students from these underrepresented groups, as well as help to debunk the notion that all mathematicians are from the same demographic group.

A second project currently sponsored by URep is a campus-wide mathematics discussion forum. The forum is currently being constructed by undergraduate student Michael Hoffman. We hope that this will provide an avenue for a wide variety of discussions of concern to mathematics students on campus, allowing them to share academic and career advice, personal struggles and encouragement, and other relevant information.

## 3 Special activities

In this section, we highlight one-time activities.

### 3.1 MSRI workshop (October 14-17)

The MSRI workshop, "Promoting Diversity at the Graduate Level in Mathematics: a National Forum" was held October 14-17, 2008. Several members of URep attended and encouraged faculty to come as well. The goal of the conference was to identify specific challenges of being a minority in

a math graduate program and some concrete steps institutions can take to help students overcome these challenges. The conference offered many concrete suggestions for promoting diversity at a graduate program.

### **3.2 MUSA panel (February 19)**

Several graduate students (2 from URep, 2 from MGSA) participated in a panel organized by MUSA to talk about math and math graduate school with undergraduates. Participants asked questions such as how important the math GRE score is, what is the most important undergraduate course for future study in mathematics, and whether having to make up a math class would count against them professionally in later life. It seemed like it would be nice to have more regular information transfer on these topics and general contact between the two groups, something that has been accomplished in part by MathSpace.

### **3.3 Berkeley EDGE panel (March 31)**

Manny Reyes was URep's representative on a Berkeley EDGE panel. Berkeley EDGE is a recruitment, retention and advancement program designed to increase the number of underrepresented minority students who acquire doctoral degrees in the fields of science, technology, engineering and mathematics. At the panel, URep made contact with other student-led diversity groups on campus, including Compass (a program that supports diversity in the physical sciences by bringing together undergraduate and graduate students), SWPS (Society of Women in the Physical Sciences), AIGSES (American Indian Graduate Science and Engineering Students), LAGSES (Latino Graduate Science and Engineering Students), SACNAS (Society of the Advancement of Chicanos and Native Americans in Science), and BGEES (Black Graduate Engineering and Science Students). At a follow-up Critical points discussion on April 29, we continued our discussion with the other groups.

### **3.4 Talk by Claude Steele (April 1)**

On April 1, the UC Psychology Department, Institute of Human Development, and the Ed School Initiative on Race, Culture, and Equity co-sponsored a talk by Prof. Claude Steele of Stanford University and director of the Center for Advanced Study in the Behavioral Sciences. The talk was titled "The Psychology of Social Identity: Its Role in Group Performance Differences and the Challenges of an Integrated Society." Claude Steele reviewed evidence on how *stereotype threat* (the possibility that a person's behavior will confirm to a stereotype of a group that he or she identifies with) undercuts the performance of women and students of color in mathematics and in a range of academic pursuits.

On April 22, URep held a screening of this talk at our Critical Points discussion forum. We hope to hold another screening and encourage some UC Berkeley math professors to attend. We hope to increase awareness of stereotype threat in the department and implement some of Claude Steele's strategies for addressing these perceptions.

### **3.5 Cal Day (April 18)**

Cal Day is an annual open house for the entire UC Berkeley campus. Within the mathematics department, MUSA and the undergraduate advisors traditionally set up tables in Evans 1015 to talk to visitors about the undergraduate math program. This year, about six graduate students also manned a table, which was filled with fun examples of the reach of higher mathematics, including

map coloring, sudoku, and origami. Our visitors ranged from young children and their parents to high school students interested in the math department. Overall, the day went well and seemed to help make the math in Evans 1015 more interactive.

## 4 Improvements to mentoring and curriculum

### 4.1 Early graduate mentoring program

One of the points of consensus of our meetings in the fall was that the mentoring and advising situation for early-stage graduate students, especially first-years, leaves a great deal to be desired. While many students have a reasonably happy time in their early years, it seems that this is a very coincidental circumstance, depending heavily on the students own habits and personality and on the lucky assignment of a motivated faculty advisor and peer mentors. Students receive little help from the department in developing a support network beyond bi-weekly teas. Particularly for a student whose background and/or appearance differs from the norm of the department – but also for one who is just especially shy – this is really no provision at all.

Essentially, our goal is to remove chance from the picture as much as possible. Our approach is two-fold. Firstly, we propose a comprehensive re-imagining of advising and mentoring. And secondly, we propose institutionalizing this re-organization, so that the old circumstances cannot easily slip back into place. The centerpiece of the plan is the new position of Mentorship Coordinator (MC), which will oversee both faculty advising and peer mentoring arrangements. The MC will also organize a number of events with the goal of establishing productive mentoring relationships. The current iteration of the plan is presently being discussed with faculty members.

Going forward, our main goal is to obtain funding to run the new mentorship program, and this is still a work in progress, which we hope will be resolved before the end of the term.

### 4.2 Undergraduate curriculum

There has been considerable interest in the undergraduate curriculum and in how undergrads make decisions about graduate school. There is a sense that there is no clearly defined track for undergrads interested in continuing on to grad school and that the process is largely self-selective. Critical Points had a three-part series last January and February on “Improving the Pipeline to Becoming a Mathematician” in which we talked about the transition from undergrad to math major and the transition from math major to math grad. From discussions there, it seems like we could do more work on both fronts: both recruiting undergrads into math by having something like a rotating seminar that gives undergrads an idea of what they can do with a math major (perhaps grad school recruiters could come in and talk; as well as rotating professor lectures) as well as setting up mentoring pairings between grads and undergrads possibly for reading courses (such as at Notre Dame). Undergrads need to be exposed to higher math earlier: both to get them interested in math, and to prepare them in case they want to continue on to graduate school. In Critical Points, most participants described some kind of proof-based class as the one that got them really hooked on math, which is unfortunate since most undergraduates will see nothing like this before they must decide whether or not to declare the math major. One idea was that grads could team up with a professor to offer a Freshman seminar course on topics in their research area. This would encourage more professors to offer these courses, which are currently our best substitution for the “rotating seminar”.

## 5 Recruitment of graduate students (Spring 2009)

### 5.1 Noetherian Ring recruitment of women prospective graduate students

1. Since Spring 2007, the Noetherian Ring (NRing) has organized and hosted a brunch for prospective women as part of the recruitment weekend. Each year this has been held at Cafe Durant and funded by the department.
2. At a joint meeting of the women's groups in STEM fields, we learned that the Society of Women Physics Students pairs each admitted woman with a graduate student mentor. This program seems to have worked, so we decided to implement it in the math department. Precise implementation will be described below. The program seems to have been extremely successful.

**Implementation of (2):** An email was sent to the NRing mailing list asking for volunteers to email prospective women. We ended up with more volunteers than prospectives, so each mentee was paired with two mentors. In all cases, at least one of the mentors had research interests matching those of the prospective and at least one mentor was a woman. Graduate students who had volunteered were often asked to email two prospectives, while those who were sought out by the organizer were only asked to email one. In some cases, it was necessary to seek out a mentor for a particular student to match research interests. When the interest was geometry, it was necessary to seek out male mentors. None asked to email prospective students refused.

**In future years:** Continue to carry out (1) and (3). Expand (3) to include women admitted to the Logic group and underrepresented minorities. To accomplish the latter, perhaps this should be a URep activity, not NRing's.

**Motivation:** Purpose is threefold. One, do what we can to ensure a critical mass of women and (ideally) of members of underrepresented minorities among the graduate students at UC Berkeley. Two, providing prospective students with a graduate student mentor and with more information about the departments they are considering is always good, whether the students decide to attend UC Berkeley or not. This activity is not solely motivated by recruiting. Three, counter the (anecdotal) sexist or racist advice that women or members of underrepresented minority groups may be given about whether to attend UC Berkeley.

### 5.2 Prospective Students in Logic

This year two members of URep were involved in recruiting prospective students into the Logic and Methodology Group from the Math department side. We tried to mimic some of the practices from other schools: for example, we organized planned meals and outings in the Berkeley area as well as initiated email contact with students before they came to visit the Berkeley campus. Rumors abound at other schools as to what Berkeley was like: that it was a weeder program and very competitive, etc. So it is nice to have an opportunity to show that we are fun and friendly. It seems like it would be a good idea if we had a more institutionalized prospective weekend for the L&M students; current L&M students comment that when they were prospectives, there was no formal schedule in place. It might make sense for those interested more in math to come during the Math weekend to take part in the activities already being planned by MGSA and URep; currently L&M weekend coincides with the Philosophy weekend, which is appropriate for L&M students who have interests in philosophy. Several prospectives commented that they would like to be grouped with other prospectives so as to share impressions this is much harder when L&M students have their own weekend (even though it coincides with the Philosophy weekend) since there are so few L&M students to begin with.

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