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Liberal Arts and Natural Sciences
Rhetoric and Writing; Biology
Despite common belief, the natural sciences are not exact sciences. The sciences are not epistemologically unique disciplines that are immune to the limitations that characterize other branches of knowledge. No, as with any other academic discipline, there is always a bit of what Thomas Kuhn, author of *The Structure of Scientific Revolutions*, calls “arbitrariness.” That is to say, empirical data must always be interpreted, consolidated, and communicated through some form of human intervention. And as with any human endeavor, there will always be room for human error due to individual bias and stalwart loyalty to paradigms. This is just as true with the sciences for as much as the discipline is driven by the pursuit of knowledge and discovery, it is kept alive only by its usefulness to humankind.

That is why I would like to propose a field entitled “The Politics of Science.” I wish to combine my interests in rhetoric and policy to determine how these two very human mediums have defined the evolution of science. To help me focus what could potentially be a broad and convoluted field, I have pinpointed three questions that I would like to investigate in depth: 1) How is research conducted and communicated within the science community? 2) How is science communicated to the general public? 3) How have both forms of communication determined the direction of science?

With the first question, I would like to examine how science works within its own home. Drawing upon the theories of science historians and philosophers like Kuhn and John R. Platt, I would like to elucidate how different scientists perceive the scientific process. In addition to research, I would like to explore the more subtle—yet just as complex—components such as funding and publishing. How do scientists work together in a field that requires constant collaboration and exchange of information and at the same time compete for limited funding?

The next area I would like to investigate is the mechanisms used to communicate science to the public. Here I would like to examine the rhetoric employed by scientists to reach and inform laypeople. Going deeper and putting into use the skills that I have refined through my Rhetoric and Writing major, I would like to explore and suggest methods with which scientists could make their research accessible, appealing, and most importantly, accurate, without needing to put their research out of context to generate interest.

In the last component of my field, I would like to combine my research from the two above areas to investigate the factors that have altered the course of science’s evolution. In this component, I would scrutinize past, current, and proposed legislation, along with their origins and impact on the direction of the science. The last of my research will focus on the place of science in current politics. President Obama hopes to ensure that decisions that can be informed by science are made on the basis of “the strongest possible evidence” so that scientific decisions can be based “on facts, not ideology.” But considering that science is a human endeavor and that humanity and ideology is, arguably, inextricable, the question to ask is whether this separation is attainable.

I will draw upon perspectives from the disciplines of Rhetoric, Government, Philosophy, History, and, of course, the Sciences.
There is a notable disconnect between the scientific and the nonscientific community. The efforts of scientists to communicate scientific knowledge clearly and effectively to the general population have been, for the most part, deficient, and few seem to recognize or care that it is the laypeople who ultimately determine the direction of the scientific evolution through politics and policy.

I find that the scientific information that does make it to the public rarely contains the context and caveats necessary for interpreting and understanding scientific data. The proclivity for packaging data into nice, neat, and unambiguous interpretations and manipulating it in order to fulfill political needs is, for the most part, understandable; ambiguity is, by definition, complicated, and many people do not like to hear that their tax dollars are going towards research that may not produce immediate, clear-cut results. Unfortunately, catering to these dispositions can often create impractical expectations and lead to inaccurate portrayals of the scientific process.

My primary goal in pursuing this field is to develop the cross-disciplinary skills necessary to help bridge the information gap between the scientific and nonscientific community. In other words, I would like to be able to approach a complex topic like intrinsic plasticity in pyramidal neurons with a writing style that will not only capture the interests and curiosity of the general public but will also put this research into context. I believe that the lack of context given to the public is deleterious not only to the scientific community but to society as a whole. And to avoid the sort of Malthusian end that I, ever the optimist, believe is imminent, I assert that we need an informed public. I am not just speaking of a public that is equipped with facts that are spoon-fed to them by the media, but a well-informed, discriminating public that understands the scientific process and can see when information is being stretched and misused to fit the needs of private stakeholders, policy-makers, or just people wanting to prove a point.

I believe the only way for us to have a scientifically literate and discriminating public is to allow for some transparency and show the general populace how science truly proceeds. The only way that I can lend a hand in this endeavor is for me, myself, to explore not only the methodology but the politics and rhetoric that are crucial to the shaping of scientific research.

Name two faculty with research interests in your area. Include their home departments and relevant research interests. If a research interest isn't obviously related to your topic, explain its relevance.

Davida Charney
Department of Rhetoric and Writing
Rhetoric of Science

Sahotra Sarkar
Department of Philosophy
Philosophy of Biology, Philosophy of Science
Explain how each course is relevant to this field. What do you hope to learn from each?

**Primary Courses**

**RHE 330E  RHETORIC OF SCIENCE IN POPULAR MEDIA**

This rhetoric course allows for students to examine how scientific inventions and discoveries are communicated to the public through media outlets such as newspapers, magazines, and popular science books. This course emphasizes the importance of accurately portraying the scientific process and its findings to ensure stronger decisions in relation to health care, the environment, the food supply, and national security. Through the evaluation of science writers and through the authoring of scientific news articles, I hope to be able to discover methods that are not only appealing to the general public but also provide them an accurate depiction of how science proceeds.

**BIO 377  UNDERGRADUATE RESEARCH-FRI**

This is a credit course for undergraduate research. After at least one long semester of working in a Freshman Research Initiative-affiliated lab, students can opt to take this course to continue their research and learn how to further apply it to their field. In this class, not only will I be given the opportunity to conduct lab research, thus gain a clearer understanding of the technical side of science, but I will also be given an environment in which I can discuss my individual research with faculty members and my lab mates. In the lectures, we will look at current research being done in our field and debate the limitations and implications of this research. Then, each week, I will present my own research, which will too be critiqued by my lab mates. This sometimes brutal process will show me a) how to clearly present scientific projects b) how to “think scientifically” by showing me where experiments can fall short and c) how scientists communicate in a competitive yet collaborative lab environment.

**PHL 363L  PHILOSOPHY OF BIOLOGY**

This philosophy course explores the philosophical problems of contemporary biology such as how biological knowledge is interpreted, how this knowledge is actually acquired and then justified, and how this knowledge influences society as a whole. I believe that this course will clue me in on the subtle factors that contribute to the progression of the biological discipline. Currently, I believe that rhetoric plays an incredibly important role in the interpretation and justification of biological knowledge, but I suspect that this course will open my eyes to other important components that I have yet to consider.
**Alternate Courses**

**RHE 366**

**INTERNSHIPS IN RHETORIC AND WRITING: Radiolab Internship**

This position has not yet been secured, but if it is, I would like it to be a part of my Texas IP Fellows experience. Radiolab is a syndicated, high-production radio program produced by NPR. The producers take scientific inquiries such as “what makes the ‘mind’?” and “what forms our ‘sense of self’?” and “how do we remember and why do we forget?” and investigates them thorough a broad range of perspectives, with a strong emphasis on the science. They communicate these questions to a mass audience in a way that is not only highly appealing and entertaining, but also comprehensively informative. What I truly hope to be able to take from this internship is how to start a conversation about science. I want to be able to use rhetoric to teach people how to be okay with the uncertainty that is inherent with science. I do not wish to provide precise answers, but ask questions that generate more questions—that generate conversation—and I want my audience to be comfortable with this. It’s a difficult goal, but somehow, Radiolab manages to do this incredibly well.

**GOV 679HA**

**HONORS TUTORIAL COURSE**

With the guidance of a faculty member in the government department, I would like to create a conference course that investigates how past US legislation has altered the course of science. Whether it is President Franklin Roosevelt’s creation of “The Uranium Committee,” which led to the Manhattan Project, or President Bush’s ban on stem cell research, which recently has been lifted—though maybe too late—by President Obama, I hope that looking into our federal government’s involvement with the scientific field will provide me with a stronger understanding of the far reaching implications of policy on science.

**PHL 322**

**SCIENCE AND THE MODERN WORLD**

This course investigates the role of science and scientists in the larger world. The coursework first looks at scientific revolutions and how they have changed the collective human thought process, and then students are expected to examine how we, as thinking beings, fit into the “cosmic scheme,” with an emphasis on the philosophical issues that arise in an anthropocentric scheme where humans are the sole thinking and observing beings. I believe this course will provide me with the information and insight necessary to question the purpose of science in our current society and the role and responsibilities of a scientist.