

**Science and Justice Working Group End of the Year Report 2007–08
And Proposal for 2008–2009**

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This document describes the activities of the Science and Justice Working Group (SJWG) in the academic year 2007-2008, and presents a proposal for the 2008-2009 academic year.

I. Summary of 2007–08 SJWG Activities

The Science and Justice Working Group formed in September of 2006 with the goal of expanding UCSC’s historical focus on social justice to include questions about the formation of science and technology, and related public-policy debates.¹ The initiative grew out of conversations between faculty in the Division of Social Sciences (Jenny Reardon, Sociology; Michael Hutchison, then Dean of the Division of Social Sciences), the School of Engineering (David Haussler, Biomolecular Sciences and Engineering (BMSE); David Deamer, BMSE; Steve Kang, then Dean of the School of Engineering), and the Humanities Division (Donna Haraway, History of Consciousness; Karen Barad, Feminist Studies). The Group recognized early on that to be successful, it would have to emerge from meaningful interdivisional dialogue, involving all five divisions of the University. In the academic year 2006-07, the group focused on building this dialogue. Although at the beginning of the year, the group consisted mostly of Social Science and Humanities faculty and graduate students, by the year’s end, the thirty or so active members of the group are faculty, staff, and graduate students were almost evenly split between the Social Science, Engineering, Physical and Biological Sciences and Humanities divisions. The activities the Group pursued to build this interdivisional conversation consisted of a research seminar, a Critical Friends Series, a movie screening series, and end-of-year meeting.

In the 2007–2008 academic year, SJWG built on our success in interdisciplinary events and dialogues, increasing our regular attendance rate and hosting multiple well-attended public events. Our ability to encourage dialogue among people with varying intellectual background was facilitated by two decisions. First, we moved toward a problem driven model of inquiry. Rather than focusing on large, theoretical questions, we used specific problems as a concrete object around which we could discuss the major themes of our group. This model gave all members—social science, humanities, engineering, and natural sciences—entree into the discussions. Second, as the Group developed more familiarity between core members, we found that a habit of “red-flagging” jargon or assumptions that members found disconcerting improved our dialogues.

Below is a description of events hosted and co-sponsored by SJWG in the 2007–08 academic year:

¹ The group defined social justice broadly to include both the profound human benefits of science and technology and the social and political transformations that they may pose.

Bi-Weekly Research Seminar

The Group's bi-weekly meetings focused on themes that were of common interest to members across the disciplines. Some of these themes were central topics open for discussion in a given week, but they were often points of discussion following presentations or colloquia around a specific problem-based topic.

Curiosity as a Virtue

Doing "science and justice" work means creating an environment that supports efforts to engage with one another across differences. In the context of SJWG research seminars, this meant creating an environment in which participants were willing to make mistakes and to revise their own positions, views, and practices. Central to this was the effort to cultivate curiosity as a virtue of the seminar space. "Being curious" implies stepping beyond habitual modes of engagement in order to explore other possible ways of looking, questioning, and intra-acting. Many of our Science and Justice events have been oriented toward cultivating curiosity as a virtue, including our ongoing "critical friends" series.

Scientific Literacy

In recent decades, on both sides of the political spectrum, we have seen an increasing tendency for people to react against new developments in science and technology. Debates about stem cell research and genetically engineered foods are cases in point. We agree that it is absolutely necessary to recognize and address the potentially negative consequences of scientific innovations, but, as SJWG member Donna Haraway suggests, we need to learn to respond to these developments instead of reacting. Whereas "reaction" has the connotation of an unconscious reflex or a conditioned behavior, "response" suggests taking a step back to understand the situation so that one can intervene effectively. In the Working Group, we sought to develop our ability to respond to both developments in biotechnology and each other's different perspectives on the position of science in society. This was achieved by incorporating some reflexive discussion about the Group itself within most events.

These efforts were bolstered by also incorporating Working Group member Karen Barad's emphasis the importance of "scientific literacy". Scientific literacy is not simply a matter of educating non-scientists about how science works. For Barad, the important question is: What does it mean to do science responsibly, and what kind of literacy is required for that? There is no formula for "how to do science responsibly", and therefore what "scientific literacy" means, and whose literacy we are concerned with, depends on the context. The Working Group's problem-based approach proved to be fruitful for developing a broad notion of scientific literacy. The Working Group was able to successfully incorporate ethical, historical, social, and technological contexts and implications of the topics under discussion.

Partnerships in Science and Justice

The demands of thinking critically about science and social justice require that we challenge current notions of “expertise.” The idea that we can turn to scientific “experts” to interpret recent scientific findings, or “ethical experts” to explain the ethical implications of emerging technologies has become deeply problematic because fields of expertise cannot be separated out so neatly. The really important questions often arise at the limits, boundaries, and intersections of expert domains.

In order to confront the moral and political complexities of our times we need new forms of dialogue, new hybrid languages, and new kinds of research collaborations. This is the idea behind “partnerships in science and justice”. Under this heading we explored what kind of partnerships are coming into being that can adequately respond to specific situated concerns at the intersection of scientific practice and social justice activism. Partnerships such as these necessarily transform the meaning of “expertise” because they require a greater degree of communicative competence across fields of knowledge.

In some of our recent events, the Science and Justice Working Group has considered the promises and challenges of partnerships in environmental justice (popular epidemiology, toxicology and toxicogenomics) and alternative energy and transportation systems (biofuels, personal rapid transit).

Reframing Bioethics

Given the interdisciplinary character of SJWG, there are many opinions of what bioethics as a discipline can and ought to do with regard to biotechnological problems. One of the virtues of the SJWG is the ability to illuminate the many points at which ethical decisions get made, and sometimes the places that they fail to get made. Thus, a common theme in our discussions was opening up the methods available to ethical inquiries. We found that bioethics as a discipline and institution often “arrives too late” at the table to make important interventions. A general consensus in the group is that traditional applied ethics methodologies that understand ethics as abstract value mediations are partly to blame for this problem. Because biotechnology often involves practices that remakes boundaries that are often taken for granted, such as between species or individual human subjects, ethical theories that rely on those boundaries being stable and determinate fit poorly within the challenges that biotechnology presents. Our discussions often sought to reframe ethical inquiries around a broader conception of flourishing for the human and non-human actors under consideration. Such an approach understands that an important aspect of ethical inquiry is accounting for the ways that our knowledge producing practices, our ethical concepts, and the materiality of our scientific endeavors are all entangled together. Thus, our conversations often contained critical engagements with ethical theory and methodology, allowing interdisciplinary reflections of the stakes in biotechnology.

Guest Lectures and Colloquia

In the 2007–08 academic year, SJWG hosted and co-sponsored a number of guest lectures and colloquia. These events often had sponsors in multiple university divisions.

Catherine Waldby: "The Biopolitics of Reproduction: Post-Fordist Biotechnology and Women's Clinical Labor"

October 3, 2007

Professor Catherine Waldby is International Research Fellow at the University of Sydney, and collaborating partner of the Global Biopolitics Research Group (www.globalbiopolitics.org). She researches and publishes in social studies of biomedicine and the life sciences. SJWG co-sponsored the talk she gave at the Center for Cultural Studies on assisted reproductive technology and the centrality of reproductive tissue (embryos, oocytes, cord blood) to the regenerative medicine industries. A central contention of her presentation was that while nation states have lost traction over female reproductive biology and are less and less able to mobilize it for nation-building, it is increasingly available for private investment and capitalization in the bioeconomy. Focusing on global markets for women's oocytes (unfertilized eggs), Waldby explored the consequences of framing women's contribution to the biotechnology industries as labor, in historical continuity with earlier colonial forms of female bodily labor, and cognate to other forms of feminized global production.

Jonathan Moreno: Ethics of Human Embryonic Stem Cell Research

October 29, 2007

Professor Jonathan Moreno, is a prominent bioethicist and professor of Biomedical Ethics at the University of Virginia. In this seminar co-sponsored by SJWG, Moreno provided an introduction to the science of embryonic stem cells, followed by a discussion of the ethical and policy issues. Key ethical issues included the sources of human embryonic stem cells, egg donation, and chimeras. Moreno co-chaired the National Academies of Science 2005 Guidelines on Stem Cell Research and shared insights and history from this policy. ▲

Jake Metcalf & Martha Kenney: Ethics in Experimentation

November 15, 2007

SJWG members Jake Metcalf and Martha Kenney presented a run-through of their upcoming panel at the 2007 Annual Meeting of the Society for the Social Studies of Science (4S). Metcalf's paper concerned a rethinking of bioethics policies around oocyte

- | procurement procedures for stem cell research. Kenney's paper concerned the ethics of self-experimentation and its role in the history of biomedical science.

Body Worlds Field Trip & Conversation

January 23, 2008

SJWG sponsored a group trip to the Body Worlds exhibit at the San Jose Museum of Science and Technology. Body Worlds is a controversial exhibit of human and animals bodies that have been preserved by a method called 'plastination.' Following the exhibit, SJWG members met with members of Santa Clara University's Center for Science, Technology, and Society. Discussions about the exhibit centered on the history of Body Worlds, its problematic procedures for getting consent from donors, and the gendered representation of the human bodies.

Sarah Franklin: After Dolly

March 14, 2008

- | Sarah Franklin has written, edited, and co-edited 15 books on reproductive and genetic technologies, as well as more than 70 articles, chapters, and reports. Her work combines traditional anthropological approaches, including both ethnographic methods and kinship theory, with more recent approaches from science studies, gender theory, and cultural studies. Franklin discussed her work on Dolly the sheep and the aftermath of the Roslin series of experiments into transgenesis using the example of iPS, or induced pluripotent stem cells. This seminar co-hosted by the SJWG provided the occasion to review some of the political differences between US and UK policy toward stem cell research, with a look back at what feminist science studies has had to say about the embryo and fetus. ▲

Troy Duster: Criminal Justice/Genomic Justice?

April 23, 2007

- | Professor Troy Duster is a sociologist specially in race and biotechnology at NYU and UC Berkeley. In March 2007, the U.K. government proposed entering into DNA databases those youths deemed "at risk" for being criminals. Duster's seminar and the following discussion with the SJWG focused on a series of questions about the use of genetics in the criminal justice system. How can/should "we" respond to such proposals? DNA databases have been celebrated for exonerating those unjustly charged with crimes, and for increasing the effectiveness of the criminal "justice" system, but at what cost? Are DNA databases creating new classes of persons (e.g., proto-criminals)? How do they intersect with/alter issues of race, class and gender, issues that already strongly shape the criminal "justice system"? What are the justice issues raised by these forensic databases, and how do they relate to questions about prisons and justice? Do we know? What do we

yet need to know to answer this question? What can be done to address these justice issues, to the extent that we now know what they are?

**Energy Worlds: Considering Creative Approaches to Energy Consumption/
Production**

April 29, 2008

Dr. John Shinn is a chemical engineer who sits on the board of directors for Engineers without Borders and is also a senior staff advisor for global issues at Chevron. His round table discussion focused on pragmatic and creative approaches to energy production/consumption in an era of climate change. Shinn has focused over 30 years of professional activity in energy-related research, development, and policy on the creation of approaches that deliver the needed energy supply to support human development in an environmentally- and socially-beneficial manner. Recently, he's been especially interested in exploring potential roles for (and conflicts among) international, national, and local regulatory apparatuses in contrast to (or in collaboration with) market incentives.

**When Science Meets Justice(s): A Reading and Conversation with Donna Haraway
and Karen Barad**

April 30, 2008

Science and Justice Working Group members and UCSC faculty Donna Haraway and Karen Barad both published new books this year: *When Species Meet* (Minnesota) and *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Duke). In this session, we explored what new directions, new questions, and new analytics their books offer to those of us concerned with the broader project of science and justice. Professors Barad and Haraway joined us for the discussion.

Sara Shostak: Environmental Justice/Genomic Justice?

May 7, 2008

In this session, we discussed with Professor Sara Shostak (Brandeis University) the place of genomics in formulating an environmental justice agenda. Professor Shostak is a science studies and public health scholar who for the last decade has been following the emergence of gene-environment studies.

Conferences & Symposia

Race Work

May 12, 2008

In May 2008, the Working Group hosted a one day symposium on the use of racial categories in forensic anthropology and genomics, titled “Race Work: The Peril and Promise of Using Racial Categories in Forensic, Genetic, and Biomedical Research.” The topics and list of scheduled guests were generated by graduate student members of the Working Group who work in forensic anthropology. Race Work offers a good example of SJWG’s evolving model of problem–driven inquiry—members of the UCSC community approached us with a set of theoretical and practical challenges that demand interdisciplinary attention and proposed the symposium.

The invited guests included Susan Leigh Star of Santa Clara University Center for Science, Technology and Society; Cris Hughes, UCSC Anthropology Dept. and SJWG member; Stephen Ousley, Merceyhurst College, Department of Applied Forensics; Sandra Lee, Stanford Center for Biomedical Ethics; Scarlett Lin Gomez, Northern California Cancer Center; and Andro Hus, of 23andme. Around thirty members of the UCSC community attended the symposium.

Several central topics were considered. First were issues of accuracy and validity in forensic science. The field of forensic anthropology (which has both academic and professional components) operates with a divergent set of epistemologies: "Metric" and "non-metric" methods represent very different ways of conceptualizing the phenotypic correlates of racial identity. Furthermore, the field confronts several challenges as it seeks to standardize racial categories. There are no accepted standards for deciding which racial categories should be used, who the categories include, and why these are valid. In addition, there are no solid methods for incorporating the fact that racial categories are continuously refined and always contested. Developing such a method would require incorporating non-biological knowledges, such as ethnographic and sociological methods, in order to assist in sorting out racial identity.

Finally, there are significant theoretical challenges of uncertainty and indeterminacy. While empirical knowledge is always uncertain and revisable, there may be cases in which the racial categories used by forensic science are fundamentally indeterminate and have no final status. Checking methods of racial identification against individuals' self-identified racial categories can provide an estimate of the margin of error (a measure of uncertainty). But this cannot address the indeterminacy of racial categories—what does it mean to "correctly" classify someone if the boundaries between populations (as defined by racial identity) are not determinate? In other words, if there is no fixed set of criteria for sorting people into discrete sub-populations by race, then what does it mean to "accurately" classify an individual as being a member of a racial group?

Cris Hughes highlighted these issues in her presentation, emphasizing the discontinuity between jurisdictions in how the race of a missing person or a found skeleton are defined. Because the professional forensic anthropology community has not sufficiently

formalized a way to connect metric measures of a body to social categories of race, this discontinuity allows for troubling amounts of miscommunication and subjective calls. She suggested a broadly interdisciplinary approach and an effort to bring together academic and professional forensic communities would help with this matter. Steve Ousley suggested that we ought to recognize a difference between the categories of “social and bureaucratic race” defined by social and government records and “biorace” defined using biological variables such as blood type and genetic markers. The existence of these two types of racial categorization pose the challenge of knowing whether someone has been correctly categorized, especially when the categorizer is unfamiliar with the biological variation and social stratifications within the race. Moderator Leigh Star emphasized the problem that post-hoc affirmation does not prove that the methods or the categories work. How the data is collected—which forms are filled out by whom—matters substantially to the accuracy and meaning of the categorizing work.

Second, the symposium addressed the question of what genomics has to say about the meaning of “race” and “racial categories.” Genomics technologies, which require sampling across human populations broadly, bring to the fore the limitation of population data. Genomics has the possibility of illuminating human demographic and ancestral patterns, but the numerous problems with defining historically and socially contingent populations runs the risk of reifying categories of people inappropriately within the data. Moving from racial categories to geographic categories has not been successful in emptying the data of social histories. The lingering questions about the construction of these categories and their role in the data become more pronounced when moving genomics technologies into epidemiological and clinical contexts. For instance, 23andme.com, a personal genomics company, has multiple challenges in representing population information because non-white populations are severely underrepresented in the data. This raises ethical questions about distributing risk information that may not be accurate within a demographic. It is also not an obvious solution to to sample more broadly because some populations may wish to avoid sampling due to historical patterns of exploitation and discrimination. In addition to representation, there are questions of access. Unequal access, due to unevenly distributed resources and information, may turn a currently “recreational” product into a tool that reinforces access inequality.

Jeffrey Long suggested that the question of “what is race?” could be rephrased as “does membership in a race convey any useful information about a person?” He pointed out that nucleotide diversity in non-Africans is essentially a subset of nucleotide diversity in Africans—heterozygosity is greatest in Africa, less in Europe, less in Asia, and least in the Americas. Furthermore, the variation that genomics has illuminated often does not match the way that societies use racial categories. Most of our common variations even precede the physiologically modern human, and there is only a small “blip” that coincides with the “out of Africa” migrations. It does not appear that any one person belongs to a single set of variations, but rather within nested subsets of variation that do not easily fit our implicit understandings of race. It is also the case that although alleles identify a

group, a group does not identify the alleles that will be found: it is possible to have variations that appear only within one group but do not show up in every, or even most, members of that group. Long concluded with the claims that 1) human genetic diversity is distributed in nested subsets; 2) pattern is best explained in terms of human migrations and founder events, NOT race; and 3) genes predict ancestry better than ancestry predicts genes. Andro Hsu from 23andme.com presented on his company's attempts to address some of these issues with their product. Their goals are to search scientific literature for genetic associations and present the user's phenotype in that context. In doing so, they must address the question of whether and how race or ethnicity plays a role in genetic associations. Some associations seem to be shared across populations, while others appear to be specific to one population. However, it is not always clear whether those associations are due to cultural and environmental differences or genetic differences. Thus, it is important to not assume that findings developed from samples with European ancestry can tell us much about the risks for people of other ancestries. 23andme thus makes it explicit to their customers that the data is often specific to Europeans (who have been by far the most heavily sampled population), but will still provide some approximation of risk for a given genotype. Hsu argued that these shortcomings indicate a need to make genomic information much more widely available and have epidemiological databases that represent non-European populations much better.

II. Future Directions & Planned Activities

The Working Group will continue to build on our successes in terms of developing a problem-driven approach to interdisciplinary discussions. We will also be building on our substantive themes from the previous year. In addition to our regular work, we will also be moving toward expanding our role in the University community, including applying to the National Science Foundation for funding to run a pilot research and pedagogy program.

Following are themes and activities planned for the next school year.

Race Work

The role of race in science and justice issues, especially genomics, has been a consistent theme of the Working Group. One of the first events of the year will be a recap of the Race Work Symposium from April 2008. The forensic anthropology students who proposed the symposium will present a draft of their research paper on the topic.

Database Literacy

This is a new substantive theme for the Working Group, but builds off of our interests in racial categories. One of the operating assumptions of the Group is that scientific literacy means more than just understanding the facts—it also includes critically assessing how those facts get made. Thus, an emphasis on database literacy means that we will explore how certain social, political, or ontological categories get built into database technologies. As databases become ever more important in biotechnologies and bioinformatics, it is clear that there needs to be more attention paid to how these categories are taken up and then maintained by the technology. Potential events supporting this theme are continued collaborations with members of David Haussler's group, including presentations to the S&J group on the challenges they face designing database structures that are both epistemologically rigorous, and that respond to social justice concerns. Another possible speaker is Santa Clara University's Leigh Star, who is an expert on values in information technology and infrastructure.

Energy Worlds

Our Energy Worlds events from the 2007–2008 school year were among the best attended of the year. As the controversies around biofuels and global food supply have demonstrated, addressing global warming and energy security demands a broad, systems-oriented approach because there can be dramatic, unexpected consequences. Potential guests include David Blume from the International Institute for Ecological Agriculture in Santa Cruz and researchers from UCSC working on algae genetically engineered to produce biofuels. Because of the success of the half-day Race Work symposium format and strong interest in last year's Energy Worlds lectures, the Working Group will likely try to organize a half-day symposium on energy worlds.

Genomic Diversity: New Practices

We would like to continue to develop our work on discerning and developing new practices for understanding genomic diversity that incorporates an awareness of the social justice issues at stake in understanding the diversity of life at the genomic level. We will continue to work with Professor David Haussler's group to design these events. Early in the fall, we will invite Working Group member Jake Metcalf and his collaborator, Stanford Postdoctoral Fellow Sarah Richardson, to share their recent inquiry into the epistemic standards used in research that ties genomics research to human behavioral traits.

Sci-Art

A continuing interest of our members is the intersection of art and science. New artistic styles, such as BioArt, have incorporated both scientific and artistic expertise. This has raised new aesthetic and epistemological potentials. Potential guests include Dee Hibbert-Jones (UCSC, Art) and Beatriz de Costa (UC Irvine, Art).

Stem Cells

UCSC is developing a new emphasis on biomedical research, including stem cells. The Working Group will explore ethical, social, and political issues of stem cell research that are often ignored by the debates around the moral status of embryos. Possible guests include Mark Mangle (UCSC, Applied Mathematics and Statistics).

NSF Education Grant

Presently Reardon, assisted by Metcalf, is developing a proposal to the NSF to fund a pilot interdisciplinary graduate student research and training program. This program would support a series of courses that include social science, humanities, natural science and engineering graduate students in discussion about social and ethical landscapes in natural science and technology. The goal of these courses will be to build a shared literacy between the students from the different disciplines and encourage collaborative opportunities. Students who wish to continue the coursework and develop interdisciplinary research projects will be invited to submit research proposals that will be competitively funded. Funding will likely be offered for one quarter each school year, pending ongoing participation in the interdisciplinary group. Such a research and education program would provide a formalization of SJWG's role in the University and provide new opportunities for outreach.

III. Proposed Budget for 2008–2009 Budget

Research Seminar

3 speakers from within the UC system @ \$500/person	\$1,500
3 speakers from outside the UC system @ \$1000/person	\$3,000
Food for Seminar Meetings	\$ 500
Total	\$5,000

Organizational and Research Support

Summer Graduate Research Support (65 hours)	\$ 2,500
Summer Salary	\$ 7,500
Total	\$10,000
YEAR ONE TOTAL	\$15,000

IV. Addendum: Selected Rapporteur Reports

Donna Haraway: “When Species Meet in Art and Genomics”

31 October 2007

Haraway led the Science and Justice Working Group in a discussion of the radical experimental bioartist, Patricia Piccinini and the anthropologist, Deborah Bird Rose. With Picinnini and Rose, she asked the group to think about genomics as a country in which we currently live, and asked us what it would mean to take care of this new and emerging country. At the heart of Professor Haraway’s talk was a concern with how genomics and bioinformatics might be places (or, in the language of anthropologist Deborah Bird Rose, “country”) where we learn how to inhabit our new bioscientific worlds in ways that further the goals of decolonization. Far from practices that further colonialism and racism, Haraway brought to light the ways that some genomic and bioinformatics resources help us to undo colonizing practices of sorting self from other through showing us how species are related. “Species,” Haraway explained, “are far from sealed off entities.” They are “always co-relational.” Haraway explored how genomics raises the question of what is “the human” in ways that might lead us be more open and accepting. As we create chimeras, the goal is to create an organism that is as similar to the human as possible without being the same. With technologies that pose questions about human nature we run the risk of becoming essentialist about the results and ignoring the importance of using new insights to critically assess our relationships to each other and other animals. However, as genomics teaches us about our heritage it can help us to inherit our past. This knowledge of the past can help us lives more richly and thickly in the present.

Mark Diekhans: “Art of Genome Browsing”

14 November 2007

Mark Diekhans, a technician on the Human Genome Browser (HGB) team here at UCSC offered the SJWG a chance to observe and discuss the browser (<http://genome.ucsc.edu>). His tour included an overview of genomes and genome biology, an introduction to the HGB, examples of the kind of information displayed through the browser, and a demonstration of how to search the browser. In Mark’s words, the browser is a ‘visualization in reference genome space’ that organizes data in annotation tracks mapped onto chromosome sequences. Annotation tracks can be viewed at many different levels, from chromosome to base sequences. There are presently 41 different species displayed on the browser. Access to the browser (designed by Jim Kent at UCSC in 2000) is freely available to researchers and the public. Mark’s introduction to basic genomics included a discussion of genes, transposons, single nucleotide polymorphisms, and short tandem repeats, all of which are important to interpreting the data displayed in the browser. Mark also shared cautionary case studies about how genomics data can be misinterpreted

(especially by the press), including BRCA1 ('the breast cancer gene') and FOXP2 ('the speech gene').

The first point of departure for discussion was the notion of a 'reference genome.' The browser displays comparisons across species specific reference genomes, which stand in as a representative of a species. The human reference genome is the haploid genome of an anonymous male donor from Buffalo, NY, and does not in anyway represent an 'ideal' human genome. Comparison across references allows genomics researchers to identify the location of functional and historical elements by aligning patterns across genomes. Discussion included concerns about the use of the phrase '*the* human genome' when the information displayed is actually '*a* human genome.' Mark noted that although the reference genome is one person's, when an important region is studied there are samples taken from a variety of people to account for a partial set possible variations. The references for such data are accessible from the browser.

The discussion about reference genomes lead to a discussion concerning how genomics data might be displayed to represent different kinds of relationships between organisms. As it is arranged now the browser is most useful for examining evolutionary relationships, particularly the conservation of certain genes through ancestral histories. Hiram noted that genomics is primarily about telling evolutionary histories—since every genetic trait must be received from an ancestor, a genomics perspective is ultimately about ancestry. Donna suggested that there are other kinds of relationships that are of substantial interest that are interrelated with genomics and profoundly useful, such as toxicogenomics. Rather than being interested in straightforward ancestry, a researcher may want to know about the genomics elements of a present environmental problem. These relationships require a different temporality than what is available on the browser.

SJWG Field Trip to Body Worlds Exhibit at San Jose Tech Museum 23 January 2008

Report: 'Body Worlds' is a traveling exhibit of plastinated human bodies that are displayed in various poses and deconstructions. Body Worlds was developed by German anatomist and artist Gunther von Hagens, who invented the plastination process that allows the bodies to be preserved and displayed. The exhibit is promoted as artistic and educational.

The Science and Justice Working Group decided to attend Body Worlds in San Jose because of the controversies that have surrounded the exhibit—as one of the more dramatic conjunctions of science, public education, and human values, Body Worlds has drawn a lot of critical attention. These controversies include problems with informed consent of those people whose bodies were used in earlier versions of the exhibit, portrayals of pregnancy and fetuses, and the use of human cadavers in a public art

exhibit. Prior to attending the exhibit, SJWG circulated a paper by Natalie Loveless, a student in History of Consciousness who studies relationships between art and science, that examines the ways Body Worlds is promoted in different cultural contexts alternately as art or education.

The exhibit was also attended by members of the Santa Clara University Center for Science, Technology and Society. Afterwards, SJWG members attended an informal meeting at the CSTS office in San Jose. Together, we discussed our impressions of the exhibit. Much of the discussion focused on the gendering of the exhibited bodies. Male bodies were portrayed primarily as engaging in aggressive sports activities or representing ‘thinking.’ Female bodies were primarily engaged in graceful activities (yoga, dancing, and ice skating), pregnant, or generally passive objects of art. No females bodies were in ‘thinking’ poses. The pregnant female body, with an exposed fetus in the uterus, was titled ‘Woman With Life,’ which struck our members as an attempt to ameliorate the objections from anti-abortion groups. Many members were especially struck by an exhibit claiming that male and female brains are fundamentally different in a way that echoed egregious gender stereotypes and is not supported by cognitive science. Finally, for an ‘educational’ exhibit in a science museum, we found it surprising that there was no mention of the biological evolution of the human body.

SJWG and CSTS members close by discussing future opportunities for collaboration. One possibility is a shared conference on biotechnology and aid for third-world peoples.

Colloquium with Troy Duster: “Criminal Justice/Genomic Justice?”
23 April 2008

This event began with Reardon recapping Duster’s previous talk about the “CSI effect” and DNA databanks. She mentioned that there was lots of attention on DNA data when she lived in the UK last winter. The front page of the “Observer” recently had a headline, “ ‘Put Young Children in DNA Database,’ Police Urge.” She asked, “How do we respond to this?” In the UK, there is now biometric scanning/storing of biological information for migration and immigration policies ... In Troy’s earlier talk, he discussed the bias of the data base being 2/3 people of color, so Jenny raises the question, “Can we put everyone in the database?”

Duster responded that it doesn’t change the operation of race. He noted that there would be a false sense of universal justice. That is, having everybody is in the database assumes that since we are all in, we are all equally subject to whatever it means to be in the database. Troy discussed a case in the late 1980s that took place at University of Virginia. There were about a dozen white fraternity boys, mostly from privileged backgrounds, who were raided by the police for what turned out to be a cocaine raid. The community could not believe the police would target college-attending white boys while real “criminals” are out on the street. Duster contends that the apparatus of state will always

turn primarily to vulnerable populations, which consequently turn out to be predominantly black and Latino arrests. He stated that if there were a universal database, such as in Portugal since 2004, there would continue to be arrests in targeted areas. “Cold hits” are arrested on the streets and not on privileged college campuses. The important thing to think about is what is the context and specifics of question. That is as long as we have the apparatus of the state, it’s fool’s gold to have universal database.

Donna Haraway turned discussion toward the question of positive harm. She agreed that racial, class distributions are fundamental issues, especially in regards to incarceration populations. However, Donna questions whether the current database harms and whether the universal database would do positive harm or will it be a money issue? Would it be a waste of distribution? Haraway questions whether bias is structured in system and whether DNA bias is irrelevant to system or is it doing harm? Duster responded that there are both exonerations and releasing of innocent people—it’s always about individual cases.

Discussion turned towards privacy issues and whether it would be possible to protect 4th Amendment rights through technical solutions. For instance, it may be possible to divide individuals’ genetic sequences in order segment control of the sequences and allow for exonerative use without disclosing the entirety of one’s sequence at any one time. Duster responded that having technical solutions can be misleading and assumes an amount of expertise and standardization that is typically not available on a large scale in law enforcement. Presently, local, state, and national law enforcement agencies have widely divergent standards for taking, storing, and using genetic data on suspects and convicts.

In response to this, discussion moved toward how to change policing practices. Duster responds to this by suggesting that we change the reward structure within policing and challenge the funding priorities that favor prisons over schooling. For instance, there are overtime policies in police departments that encourage extra arrests and the end of shifts, incentivizing officers to make excess arrests. Similarly, the state often chooses funding law enforcement and prisons over universities because prisons create jobs for economically depressed communities and these jobs cannot be outsourced.

Several participants raised questions about how much biometric and genetic infrastructure feeds into police state and how much of it can actually be used positively to release innocent prisoners. Duster responds that DNA at best is going to handle 1-2% of all crimes. Out prisons have 2 million people. Maybe 3000 exonerates for 300,000 who are not getting it. Beatriz da Costa mentioned her experience of being an immigrant to the US and skepticism of being subject to laser scanning and questioned something along the lines of where that information is going or how might it be used against her. Duster responded that it seems to depend almost entirely on who is in control of database. The answer is going to come in context of *who* is asking the question and *who* has got the power.

SJWG member Jake Metcalf raised the question of whether we are giving DNA too much power and notes there are all sorts of ways of reading the genome and more subtle ways of understanding DNA. Some the concerns over genetic databases seems to rest on sketchy science and an incomplete understanding of exactly what types of information get stored and how they are used. As important as it is to resist the police state, it is important to avoid reifying an overly powerful understating of DNA because then it is reinforced, when really it should be challenged empirically and politically. Chelsea argued that the power of DNA in criminal justice will largely be settled by legal precedent.

Mark Diekhans made the point that there is a privilege to identifying as/with the socio-economic class that isn't scared of being targeted as "criminal." Duster mentioned that there is this pushing together of "criminals" that started off as just sexual offenders, to then violent, then, felons, then misdemeanor, to now arrestees – there's a long continuum that we need to be aware of. Duster highlights importance of possible, practical solutions. The ACLU says "arrestees, no; felons, OK..." but at level of arrestees there is potential for mobilizing.

Rebecca [politics student?] then brought up the epistemological assumption of the body. That is, without too much science how can the body tell the truth? From a political and ethical standpoint, is the idea of the body property? What are underlying assumptions about the body? Reardon added, who owns the self? Whose property is it? We've moved from ownership of land to the self...is it white guilt? Who owns a body? Can anybody have property of the self? Beatrice notes that classification is issue too. We don't have to have a good science—looking at donor profiles online; there are spaces for "homosexual tendencies" are being pathologized.

A question was raised whether there is fear of the "criminal gene"? Is there fear that we might use new or find new categorization by developing a universal database. Duster responded that crime is socially defined—even murder and rape. Historically, rape could not have happened to black women by white men or slave owners. Haraway suggested that the politics of DNA storage need to consider the politics of where samples are taken from? There is an issue of the quality of science here and assurance regulating and limitations of a set of samples/data. We are not looking at DNA but more a repeat of sequences. The politics of sampling raises the question of "who is compared to what?" Donna reminds us that DNA is not one god but is a variety of practices—the dog genome is useful to investigate—and thus we should not let DNA stand as a single word.

John Shinn & Robert Baertsch: Energy Worlds I & II
April 2008

Energy Worlds is organized around themes of science and justice as they relate to public energy issues with particular attention to the various domains in which knowledge about energy issues is formulated, contested, and transformed. We focused on the interrelationships between social and environmental justice and the broad ecologies implicated in human energy production and consumption. Central issues explored by the Energy Worlds subgroup include the relationship between energy networks and global climate change and the environmental health and public welfare implications of post-petroleum transportation systems, alternative electricity economies, resource extraction systems, and other energy production and distribution technologies.

One of the emphases of the Science and Justice Working Group thus far has been on relationships that tie together different communities of practice across disciplines. The title Energy Worlds is indebted to Donna Haraway and her notion of "worlding." Worlding signifies participation in complex systems of relationships that collectively constitute ways of living and dying across time, space, and species. Like the new worlds being created by the rise of genomics and new forms of property, energy worlds bring experts and laypersons from diverse social spheres into communication. The SJWG has generated an ongoing conversation among individuals with different intellectual, personal, and political commitments who hail from multiple domains of practice. A main goal of Energy Worlds is to identify and experiment with ways of speaking across difference in an effort to address public issues related to science and technology.

Energy Worlds 1:

"Toward a Better Planet"

Dr. John Shinn, Chemical Engineer, Chevron, Inc., Engineers Without Borders, Board of Directors

The first Energy Worlds event featured a presentation by Dr. John Shinn, a chemical engineer who sits on the board of directors for Engineers without Borders and is also a senior staff advisor for global issues at Chevron. He spoke with members of the SJWG and with a lively interdisciplinary audience about pragmatic and creative approaches to energy production/consumption in an era of climate change. His presentation centered on historical and contemporary oil industry reactions to these issues, and how corporations have responded in an evolving fashion to the efforts of NGOs, non-profits, and governments concerned with the environmental and social impacts of existing energy production systems. Dr. Shinn spoke about the surprising opportunities for collaboration and productive tension among these groups, as well as the ways in which different discursive frames and material interests shape what gets talked about and what gets done. Guided by Dr. Shinn, the SJWG began to explore potential roles for and conflicts among international, national, and local regulatory apparatuses and energy markets in addressing climate change and the increased demand for clean and efficient energy systems.

Energy Worlds 2:

"Personalized Rapid Transit (PRT)"

Robert Baertsch

The second event featured a presentation on Personalized Rapid Transit (PRT) systems by Robert Baertsch, a graduate student at the UCSC's Center for Biomolecular Sciences and Engineering who is currently employed at the NASA Ames Research Center as a member of their Green Team. PRT is an imaginative but eminently feasible attempt to create a new form of personal transportation based on computerized driverless vehicles that run along guideways and over major highways. This proposed public transit system of highly efficient, light-weight vehicles can be powered through existing grids or through solar energy. Baertsch's presentation and the ensuing discussion were attended by a broad interdisciplinary audience, including community members, students, staff, and faculty from the natural sciences, humanities, and social sciences.

CENTRAL THEMES:

1) Scale: The energy crisis will demand major infra-structural transformations, and many experts argue that it will be necessary to implement massive scale, well-coordinated structural shifts in a short period of time. How might this be approached? What are the existing and emerging global political and economic systems, from NGOs to global capital, with the potential to undertake necessary structural transformations? Who is included and excluded from these systems as they stand and how might they be reformed? Are there alternative organized publics that can accomplish energy-system shifts on the scale that is necessary? What is the role of small non-profits? What can and should local governments and organizations do in response to the energy crisis?

2) Public and Private Domains: As we work collectively to address the social impacts of existing energy systems and to mitigate the environmental effects of energy production, who will conduct research, generate data, share information, and propose alternative systems? And who, if anyone, will own, operate, and profit from these systems? Should private companies or public representatives lead the way? Within the public and private spheres, who is most capable of effecting the necessary changes that will lead to more clean and efficient energy production? What are the social and ecological justice issues implicated in questions of private-versus-public ownership?

3) Knowledge Production and Information Sharing: Participation in any conversation concerning alternative energy systems will demand certain kinds of literacy and access to accurate and relevant information. But what kinds of literacy are required? What counts as relevant information? How does an individual or group acquire the authority to produce and share information on energy production? Today, information on energy systems and climate change is highly politicized and contested from various angles. Which interest groups are at play in the domain of energy-related knowledge production

and which audiences are they addressing? When it comes to researching and discussing energy problems and potential solutions, who is speaking, who is listening, and why?

4) Locating Justice: The energy-related challenges facing communities across the globe are tied to social justice questions in many ways. Historically and presently, energy production and distribution systems have been related to social stratification. Privileged communities and disadvantaged communities do not share the benefits of energy consumption equally, nor do they bear the risks of energy production (such as pollution) equally. Energy production and consumption infrastructures, from electricity grids and power plants to roads and public transit systems, have been erected in ways that reinforce existing lines of social stratification. Consider, for example, the class-related politics of a car-based transit system, and how this system has been implicated in suburbanization and the persistence of racialized and income-based residential segregation. Energy production and consumption systems are clearly related to broader social justice questions. Those justice questions, moreover, extend beyond the affected human communities to the larger ecologies in which they are embedded: Across species and ecologies, who has stakes in the energy systems we have built and those we are planning to erect? How can they be included in a justice agenda for energy production, distribution, and consumption?