

PPAI: 1701 G - Seminar on Science and Technology Policy in the Global South

Fall 2009

Prof. Geri Augusto

Wednesday, 3:00 to 5:20 p.m. – Location TBA.

Office: Rm. 109, Taubman Center

Office Hours: Tuesdays, 4-7 p.m., and by appointment (sign-up sheet posted on door)

Telephone: 863-2289

E-mail: Geri_Augusto@Brown.edu

Overview. Using both theoretical ideas and empirical examples, this seminar will explore the relationships among science, technology, society, and public policymaking in the Global South, in places where local science and global science often collaborate and sometimes clash. The class will investigate, from a variety of perspectives, how the governance of science and technology in various parts of the Global South is influenced by their past experiences, forms of public science organization, systems of knowledge and belief, civic epistemologies and regulatory frameworks, strategic agendas for development, and tensions in power and social relations. The challenges of ethics, justice and democratization, as well as of technological innovation, will be recurring motifs. We will also consider how the concerns and practice of institutionalized science in the Global South, and differing capacities to negotiate interests, affect global research networks and international collaboration. In doing so, the seminar will help build a bridge between public affairs, public policy and science and technology studies, as well as introduce a more internationalized perspective to the study of science and technology governance.

The seminar is designed for juniors and seniors in public policy. It will be cross-listed with Science and Technology Studies. But students from other concentrations, such as Africana Studies, Latin America and Caribbean Studies, Development Studies, Public/Global Health, Environmental Studies and Engineering may also benefit from an increased understanding of the impact of science and technology on different societies and on international relations, and the processes by which different societies attempt to manage these challenges.

Objectives. The aim of the seminar is to equip students with skills in science and technology policy analysis, and provide them with a more international perspective on the practice and governance of science and technology. The seminar is designed to accommodate students with a variety of interests in its subject matter, and *training in the natural sciences is not a requirement for it, nor will the class focus on development economics.* More broadly, the seminar will help prepare students to act capably and with a more nuanced understanding of the issues at the intersection of several fields of practice: as future policy analysts, advisers and decision-makers in public sector science at home; as potential or actual professional collaborators in cross-border public science and technology research programs (e.g. global networks, “collaboratories,” framework agreements); and as designers and public administrators of programs and projects in an increasingly globalized context.

Seminar Approach. This seminar will delve into the political circumstances, socio-cultural contexts, main institutions, and knowledge dynamics animating public science and technology advising and decision-making in the Global South. The seminar will provide a broad perspective of concerns and themes common to many countries in the Global South, as well as explore in greater detail the particular examples of contemporary India, Brazil, and South Africa. (Not coincidentally, these three have recently embarked upon an important collaboration in South-South research and trade, known as IBSA.) In doing so, the class will benefit from the instructor’s experience, over more than a decade, with policymaking exercises and organizational

transformation in public sector science and technology institutions in post-apartheid South Africa, as well as past work with regional and multilateral economic development organizations. The seminar will also illuminate some similarities and differences between science and technology policy in the Global South and North, particularly the U.S.A., to enhance students' understanding of the practices shaping the globalized context of policymaking. Seminar readings will be drawn primarily from science policy studies, social studies of science and technology, and the "grey literature" of government and public research agency websites, as well as occasionally from the literatures of sustainability sciences and international development. A few video clips and films will be viewed. There will be three writing assignments: a short response paper to a reading, an opinion-editorial suggested by a course-relevant contemporary issue, and a final paper which may be an analysis of the national science and technology (or R&D) strategy of a specific country, or another research-based topic. Students will also participate in at least one web-based discussion on science and technology policy issues between the class at Brown, and university students in South Africa, India and/or Brazil enrolled in courses covering similar (or related) topics. A guest public science and technology policymaker or research manager from the Global South will address the seminar, and others speakers may be invited to do so electronically.

There is no required textbook. (Students are encouraged to consider purchasing from Brown Bookstore copies of P. Sillitoe (Ed.), *Local Science vs. Global Science: Approaches to Indigenous Knowledge in International Development*. New York: Berghahn Books, 2007; and D. Guston and D. Sarewitz, *Shaping Science and Technology Policy*, Madison: University of Wisconsin Press, 2006.) Almost all readings will be available online through OCRA/MyCourses; a few will be found on reserve at Rockefeller Library. Copies of some optional (recommended) references will also be placed on reserve in the library. Films or video clips will be made available online. Extensive optional readings are listed in an appendix to the syllabus, on MyCourses, to facilitate independent study and research on the final paper.

Seminar Rationale. Now more than ever, science and technology are being looked to not just to broaden the horizons of human knowledge and extend the limits of human imagination, but also to help solve a vast array of human needs. This is true of knowledge-based economies in the U.S., Europe, Australia and Japan. But it is also increasingly true in so-called developing countries or those "in transition". Their economies may be already industrialized (or rapidly doing so) and incorporating new technologies more integrally into production and social life, or attempting to move away from heavy reliance on commodity exports and extractive industries. Regardless, the youth are likely to already be uploading contributions to YouTube and the ranks of cellphone users include much of the population, from ordinary workers and farmers to biomedical *and* traditional doctors. While the practice of science everywhere bears many similarities, social studies of science and technology have convincingly argued that they are not just a body of systematized knowledge, but also culture and practice, embedded in context and place, and nowhere do they provide an unproblematic, utopian path to human problem-solving. Thus the utilization, both current and potential, of science and technology in the Global South to meet a variety of social goals presents a problem space, not least for policymaking, with some unique characteristics and its own social, cultural and political dynamics.

Despite important South/North differences, neither technologies nor problems obey borders, and ideas continue to cross epistemic boundaries. Many countries in Asia, Latin America, the Middle East and Africa now boast their own establishments of institutionalized science, and their policymakers are devising national and regional agendas in response to local and regional problems. Pressure is increasing to tie scientific and technological knowledge to local problem solving, and to what some have called "the context of application"—a context where politics, the arts, religion and activism also play a role. Yet science and technology institutions,

organizations, trained personnel and programs of work everywhere must increasingly find ways to work purposefully through differences, and across global political, geographical and cultural frontiers. The assumption that science research takes place almost exclusively in the global North, with developing country scientists as “junior partners,” and developing societies serving merely as sites of pathology and data/sample collection is increasingly untenable. Linear models of science development and “pipeline” technology transfer, often previously thought of as solely North-to-South, are also yielding to more complex, nonlinear understandings about research and innovation. Global science networks are on the rise, dealing with problems from public health to climate change, and global concepts are often translated locally in complex ways. These are developments and phenomena about which science and technology policymakers and their advisors in the U.S., among other places, must be increasingly aware, and such understanding can only enhance their transcultural competence.

Assignments and Grading

The seminar will require three writing assignments, organization and participation in an electronic roundtable with corresponding classes in the Global South, as well as participation in discussions and exercises in class (and possibly on a class website or blog). These entail:

- A 1-page response paper on an assigned or recommended reading, counting for 5% of the grade. There will be two opportunities for turning in this paper.
- An opinion-editorial (“op-ed”) piece based on a contemporary news story about science and technology in the Global South, using concepts and materials from the seminar to illuminate the inherent public policy issues. It should be brief (1000-2000 words) but well-founded, with the newspaper, journal or online article which prompted the opinion appended. The op-ed counts for 20% of the course grade, and will be due around mid-term.
- A final paper which will be a critical analysis and reflection, drawing on course readings and about 8 hours of research (20-30 pages, with citation of sources and bibliography), and will count for 45% of the course grade. Students may choose either of the following options:
 - The current national science and technology policy (or national research and innovation strategy) of a country in the Global South, with proposals or suggestions for its improvement.
 - Any relevant topic of interest suggested by the course discussion and readings, and the student’s own interests. (Agreement from professor beforehand, based on a short prospectus, is required for this option.)
- Class participation, which will count for 20% of the course grade, comprised of:
 - Making a brief oral presentation, which may be individual or in small group (depending on the size of the class), then leading a short discussion in class about an assigned reading at least once;: 10%.
 - Participation in class (and possible online) discussions: 10%.
- Participation in preparing and holding an electronic roundtable (may be team-based, depending on class size): 10%.

Seminar Synopsis

Part I: Introduction, Theoretical Foundations, and the Global South Knowledge Landscape ***September***

Session 1: Introduction to S&T Policy, the Global South and Why They Matter

Session 2: History, Culture and Politics of Knowledge in the Global South

Session 3: Local Ecologies of Knowledge and National Systems of Innovation

Assignment due: 1-page response paper (first opportunity; only one required)

Part II: S&T Policymaking and Governance: Issues and Processes

Session 4: Research, Development & Innovation: The Human Side

October

Session 5: Public Science Organizations & Their Governance

Session 6: Power and Publics in S&T Decision-making

Assignment due: 1-page response paper (second opportunity)

Part III: S&T Policies and Knowledge Production for Sustaining Life

Session 7: Energy, Health and Environment

Session 8: *Electronic Roundtable with Global South corresponding class(es)*

November

Session 9: Governance of Converging Technologies

Assignment due: Op-ed piece

Part IV: Transnational and Trans-epistemic Collaboration

Session 10: Science and Technology Diplomacy

Session 11: Dilemmas of International S&T Research Collaboration

Guest Speaker

December

Session 12: Wrap-Up, Reflection and Roundtable Discussion of Students' Research Ideas

Final paper due on December 18.

Schedule and Reading Assignments

Session 0: Shopping Day [Wed., Sept. 9]

Overview of seminar, requirements, etc. Class members' initial thoughts on S&T policy as a local and global concern.

A separate list of recommended (entirely optional) readings will be available on the MyCourses page. Some, but not all, of these will be available on OCRA or on reserve in the library.

Part I: Introduction, Theoretical Foundations, and the Global South Knowledge Landscape

September

Session 1: Introduction to S&T Policy, the Global South and Why They Matter

- Politics/science imbricated & reconfiguring
- Governing science: why? who? how? where?
- IBSA as exemplar: Multiple knowledge systems, multiple modernities, multiple S&T agendas

Assigned Readings:

Visvanathan, S. "Knowledge, Justice and Democracy," in M. Leach, I. Scoones and B.

Wynne, eds., *Science and Citizens* (London: Zed Books, 2005), pp. 83-94.

Jasanoff, Sheila. (2003). Technologies of humility: citizen participation in governing science.

Minerva, 41: 223-244.

Sillitoe, Paul. (2007). Local Science vs. Global Science: an Overview. In Sillitoe, Paul (Ed.).

Local Science vs. Global Science: Approaches to Indigenous Knowledge in International Development. New York: Berghahn Books, pp. 1-22.

Iaccarino, Maurizio. "Science and culture: Western science could learn a thing or two

from the way science is done in other cultures." *EMBO reports*, Vol. 4, no. 3, 2003, pp. 220-223.

Brown, Mark. (2004). Essay Review: The Political Philosophy of Science Policy. *Minerva*, 42: 77-95.

Hassan, M. (2008). Worlds Apart Together. *Nature*, 456: 6-8, 30 October 2008.]

UNDP Human Development Report 2009. Executive Summary. [online/MyCourses]

Also, explore assorted maps on MyCourses

Session 2: History, Culture and Politics of Knowledge in the Global South

- Influence and impact of colonial and imperial sciences
- Problematizing and understanding contemporary local/indigenous knowledge systems
- Professor's presentation on Afro- and Indigenous Latin American Knowledges

Augusto, Geri. (forthcoming) "A World Only Partly Named". In Wilmot, Swithin (Ed.),

Freedom: Retrospective & Prospective, Kingston, Jamaica: Ian Randle.

Kumar, Deepak. (2000). Reconstructing India: Disunity in the Science and Technology for

Development Discourse, 1900-1947. *Osiris*, special issue on Nature and Empire: Science and the Colonial Enterprise, vol. 15(second series), pp. 241-257.

Schiebinger, Londa & Swan, Claudia. "Introduction". (2005). In Schiebinger & Swan (Eds.),

Colonial Botany: Science, Commerce, and Politics in the Early Modern World.

Philadelphia: University of Pennsylvania Press, pp. 1-16.

Wane, Njoki. (2000). "Indigenous Knowledge: Lessons from the Elders – A Kenyan Case

Study". In George Dei, Budd Hall & Dorothy Rosenberg (Eds.), *Indigenous Knowledges in Global Contexts*, Toronto: University of Toronto Press, pp. 54-69.

Rhoades, Robert and Nazarea, Virginia. (2007). *Forgotten Futures: Scientific Models vs.*

- Local Visions of Land Use Change. In Sillitoe, Paul (Ed.). *Local Science vs. Global Science: Approaches to Indigenous Knowledge in International Development*. New York: Berghahn Books, pp. 231-256.
- Nanda, Meera. (2005). "Postmodernism, Hindu Nationalism and "Vedic Science". In Noretta Koertge, *Scientific Values and Civic Virtues*. Oxford: Oxford university Press, 220-235.
- Smith, Linda Tuhiwai. (1999). "Introduction". In Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, London: Zed Books, pp. 1-17.

Session 3: Local Ecologies of Knowledge and National Systems of Innovation

- National systems of innovation (NSI), learning systems, triple helix model
- Complex adaptive systems, actor-networks in science and technology

Assignment due: First opportunity to hand in a 1-page response paper, at the beginning of this session.

- Kaplan, Dave. (2008). Science and Technology Policy in South Africa: Past Performance and Proposals for the Future. *Science Technology & Society*, 13: 95-122.
- Invernizzi, Noela. (2005). Science and technology policy in transition: new challenges for Cardoso's legacy. *International Journal of Technology and Globalisation*, (1)2: 162-184.
- Rao, J.S. (1985) "Science and Technology in India." *Science, New Series*, 229(4709): 130-134. <http://www.jstor.org/stable/1695190>.
- Visvanathan, Shiv. (1998). A Celebration of Difference: Science and Democracy in India. *Science* 280(5360): 42-44.
- Etzkowitz, Henry and Loet Leydesdorff. (2000). The Dynamics of Innovation: From National Systems and "Mode 2" to a Triple Helix of University-Industry-Government Relations. *Research Policy*, 29: 109-119. [Read only up to 119; article continues.]
- Escobar, Arturo. (2007) Actors, Networks, and New Knowledge Producers: Social Movements and the Paradigmatic Transition in the Sciences. In Boaventura Santos, *Cognitive Justice in a Global World: Prudent Knowledges for a Decent Life*, Lanham, MD: Lexington Books, pp. 273-294.

Part II: S&T Policymaking and Governance: Issues and Processes

Session 4: Research, Development & Innovation: The Human Side

- "Human resources" and National R&D/R&I strategies
- Higher education and skills development
- Social dilemmas in the context of knowledge creation and innovation

Assigned Readings:

- Cozzens, Susan. Equality as an Issue in Designing Science, Technology, and Innovation Policies and Programs. Discussion paper. Georgia Institute of Technology, pp. 1-5.
- Augusto, Geri. Baobabs on Campus. In *Strategic Issues in the Development of High-level Human Resources in Science, Engineering and Technology*, Foundation for Research Development (FRD), Science and Technology Policy Series, no. 4, Pretoria, January 1995.
- Schwartzman, Simon. "Brazil: The Social Agenda." *Daedalus*, Vol. 129, No. 2, Brazil: The Burden of the past; The Promise of the Future (Spring, 2000), pp. 29-56.
- Steve Biko Institute (Salvador da Bahia) presentation data on race, science education and skills in Brazil. [MyCourses; see also <http://www.stevebiko.org.br/>]
- Leslie, Stuart and Kargon, Robert. (2006). Exporting MIT: Science, Technology, and Nation-Building in India and Iran. *Osiris*, 21: 110-130.
- Jayaraman, K. S. (2009). Indian university system overhauled. National commission set to

regulate higher education. *Nature* 460(7251), July 2009, p. 22.
UN Millennium Project (2005). *Innovation: Applying Knowledge in Development*. Task Force on Science, Technology and Innovation. London: Earthscan, pp. xxv-xxvi, 1-12 [executive summary], 88-99.

National R&D/Research & Innovation Strategies of South Africa, Brazil and India

[MyCourses/online]:

Science and Technology Indicators for India, Brazil & SA. [MyCourses/online]

October

Session 5: Public Science Organizations & Their Governance

- Public science agencies and statutory science councils
- Science advising to head of state/government
- Parliamentary/legislative oversight
- ‘social contract for science,’ principle/agent, boundary organizations
- “Transnational FDA”
- System-wide review and S&T foresight (Prof. presents a South African case)

Assigned Readings:

Jasanoff, Sheila. (1990). The Political Function of Good Science. In S. Jasanoff, *The Fifth Branch: Science Advisers as Policymakers*, Cambridge: Harvard University Press, pp. 229-250.

Guston, David. (2001). Boundary Organizations in Environmental Policy and Science: An Introduction. *Science, Technology & Human Values*, Autumn 26(4): 399-408.

Guston, David. (2003). Principal-agent theory and the structure of science policy, revisited: ‘science in policy’ and the US Report on Carcinogens. *Science and Public Policy*, 30(5): 347-357.

Palaez, Victor. State of exception in the regulation of genetically modified organisms in Brazil. *Science and Public Policy*, 36(1) February 2009, 61-71.

India public science governance article. TBA.

Selected documents from government websites [MyCourses]:

- India’s Department of Science & Technology at <http://www.dst.gov.in/index.htm>
- South Africa’s Department of Science & Technology at <http://www.dst.gov.za/>. Also <http://www.csir.co.za/enews/> and http://www.csir.co.za/publications/sciencescope_archive.html
- Brazil’s Ministry of Science & Technology at <http://www.mct.gov.br/>

Session 6: Power and Publics in Science and Technology Decision-making

- Civic epistemologies, Public understanding of science and technology (PUST), ethical/legal/social implications (ELSI)
- A different optic: political epistemologies, social movements, citizenship and technoscience (Andean, Brazilian, South African examples)

Assignment due: Second (and final) opportunity to hand in a 1-page response paper, at the beginning of this session. **Only one response paper is required for the semester.**

Assigned Readings:

Jasanoff, Sheila. (2005). Civic Epistemology. In *Designs on Nature: Science and Democracy in Europe and the United States*. Princeton: Princeton University Press, pp. 247-271,

Pestre, Dominique. "Challenges for the Democratic Management of Technoscience: Governance, Participation and the Political Today." *Science as Culture* 17, no. 2 (2008): 101-19.

Leach, Melissa and Scoones, Ian. (2003). Science and Citizenship in a Global Context. Working Paper 205, Brighton: University of Sussex Institute of Development Studies, pp. 5-18.

- Leach, Melissa and Scoones, Ian. (2007). Mobilising Citizens: Social Movements and the Politics of Knowledge. Working Paper 276, Brighton: University of Sussex Institute of Development Studies, pp. 7-27.
- Aparicio, Juan and Blaser, Mario. (2008). The “Lettered City” and the Insurrection of Subjugated Knowledges in Latin America. *Anthropological Quarterly*, 81(1), pp. 59+.
- Galvao, Jane. (2005). Invoking Rights and Ethics in Research and Practice. Brazil and Access to HIV/AIDS Drugs: A Question of Human Rights and Public Health. *American Journal of Public Health*, July 2005, 95(7): 1110-1116.

Explore selected websites and public research agency documents/articles/sites on PUST, public participation, popularization of science, etc. [MyCourses]

Part III: S&T Politics and Knowledge Production for Sustaining Life

Session 7: Energy, Health and Environment

- Energy Security, Oil & Biofuels
- Global Health, Neglected Diseases, Clinical Trials & their Public Controversies
- G/Local Environmental Knowledge & Policy

Students will be asked to select one of the three themes for this session as their primary focus for reading, and to lead the discussion on that set of readings in class. This may be done individually or in teams, depending on class size. Exploration of relevant government or public sector research agency sites should also be done, via the MyCourses page.

Assigned Readings:

Energy Security, Oil & Biofuels

Campbell, Keith. India, Brazil, South Africa turn their attention to renewables. Creamer Media’s Engineering News online, 31 Oct 08, at www.engineeringnews.co.za

CSIR. (2009). “Energy-secure South Africa”. ScienceScope, (4)1, June, 2009, pp. 22-33. At http://www.csir.co.za/publications/pdfs/june_scope.pdf.

Petrobras & Ministry of Mines and Energy. Biofuels_What you need to know about this new market, 2nd ed. Read “Presentation,” all of Chapt. 5 and Summaries *only* of other chapters. At

http://www2.petrobras.com.br/petrobras/ingles/pdf/Cartilha_Biocombustiveis_INGLES.pdf.

Downie, Andrew. “Brazil Expands Investment in Oil Drilling”. *New York Times*, 01-25-09.

Dauvergne, Peter and Neville, Kate. (2009). The Changing North-South and South-South Political Economy of Biofuels. *Third World Quarterly*, 30(6): 1087-1102.

Video clips [MyCourses]:

1) Malaysian and Indonesian palm oil industries at

<http://www.youtube.com/watch?v=8zNzfGPbZn4>

<http://www.youtube.com/watch?v=8zNzfGPbZn4&feature=fvw>

2) Brazilian alternative fuels for cars at <http://www.youtube.com/watch?v=CArPHgNd2Qo>

3) “Acaraje Exilado” at http://www.youtube.com/watch?v=1Uv_EMAvt8

Infectious and Neglected Diseases, Finding Cures & Their Public Controversies

Juma, C. and Yee-Cheong, L. (2005). Reinventing Global Health: The Role of Science, Technology & Innovation. *The Lancet*, Vol. 365, Issue 9464, p. 1105.

Singh, Jerome; Upshur, Ross; Padayatchi, Nesri. (2007). Policy Forum: XDR-TB in South Africa. No Time for Denial or Complacency. *PLoS Medicine*. January 2007 4(1): 19-25; also at www.plosmedicine.org

Rajan, Kaushik. (2007). “Experimental Values: Indian Clinical Trials and Surplus Health.” *New Left Review*, 45, May/June, pp. 67-88.

Mahajan, Manjari. (2008). Designing epidemics: models, policy-making, and global

foreknowledge in India's AIDS epidemic. *Science and Public Policy*, October 2008, 35(8): 586-596.

Makhubu, Lydia. (1998). Bioprospecting in an African Context. *Science*, 282(53386): 41-42.

**Rehad Desai (2006), *The Bushman's Secret*. [MyCourses, film streamed via OCRA]
Also, explore relevant sites on MyCourses: CSIRe-News site> Biosciences; FIOCRUZ;
Indian site TBA.**

G/Local Environmental Knowledge & Policy

Dwivedi, R. (2001). Environmental Movements in the Global South. *International Sociology*. (16):11, 11-31.

Leach, Melissa, and Robin Mearns. "Environmental Change & Policy: Challenging Received Wisdom in Africa." In *The Lie of the Land*, edited by Melissa Leach and Robin Mearns, London: James Currey/Heinemann, 1996, pp. 1-33.

Martinez-Alier, Joan. Environmental Justice, Local and Global. In F. Jameson & M. Miyoshi (Eds.) *The Cultures of Globalization*. Durham: Duke Univ. Press, 2004, 6th ed. Table 2 [only]: "Ecological Distribution Conflicts and Related Resistance Movements," 321-323.

Maathai, Wangari. Chapt. 12, "Environment and Development". In W. Maathai, *The Challenge for Africa*. New York: Pantheon, pp. 239-259.

Appendix A: "Principles of Environmental Justice" and B: "Nongovernmental Organization. Language on Environmental Racism" In Bullard, Robert, *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*, San Francisco: Sierra Book Club, 2005, pp. 299-305. See also MyCourses and <http://www.ejrc.cau.edu/NGOEJ.htm>

Gomes, Flora. (2005). *Po di Sangue*. [MyCourses, film streamed via OCRA]

Session 8: Electronic roundtable with corresponding class(es) in the South. N.B.:

Preparation may occur outside of class in small groups, with students taking primary responsibility for selection of themes and questions for discussion. The roundtable is scheduled for Wednesday, October 21. Details will be negotiated with partners, in consideration, among other things, of time-zone differences—a lesson in the pragmatics of global collaboration.

November

Session 9: Governance of Converging Technologies

- Bio-/Nano-/Info-/NeuroCognitive Technologies
- GMO food/agriculture
- Professor's presentation: "Bio-pasts>Nano-futures in South Africa"

Assigned Readings:

Singer, Peter, Fabio Salamanca-Buentello, and Abdallah Daar. Harnessing Nanotechnology to Improve Global Equity. *Issues in Science and Technology*, no. Summer (2005).

Mnyusiwalla, Anisa; Daar, Abdallah; and Singer, Peter. (2003). 'Mind the gap': science and ethics in nanotechnology. *Nanotechnology* 14: R-9-R13.

Invernizzi, Noela et al. (2008). Nanotechnology's Controversial Role for the South. *Science Technology Society*, 13: 123-148.

Juma, Calestous and Ismail Serageldin, (Lead Authors). *Freedom to Innovate: Biotechnology in Africa's Development*. Addis Ababa, Ethiopia, Pretoria, South Africa: Report for African Union, New Partnership for Africa's Development. August 2007, pp.

xv-xx [Executive Summary], 39 & 59.

http://www.nepadst.org/doclibrary/pdfs/biotech_africarep_2007.pdf

Biowatch, SA. The Cape Town Declaration: Opposition to Biotech and Nanotech Spreads, July 19, 2004. [online]

Jasanoff, Sheila. Biotechnology and Empire: The Global Power of Seeds and Science. *Osiris*, 21 (2006): 273-92.

Scoones, Ian. (2007). The contested politics of technology: biotech in Bangalore. *Science and Public Policy*, 34(4): 261-271.

Scoones, Ian. (2005). Contentious politics, contentious knowledges: mobilizing against GM crops in India, South Africa and Brazil. IDS Working Paper 256.

Part IV: Transnational and Trans-epistemic Collaboration

Session 10: Science and Technology Diplomacy

- Major conventions and treaties: UN Convention on Biodiversity, UN Framework on Climate Change, TRIPS, Kyoto Protocol, Cartagena Protocol, Stockholm Convention, etc.
- Emerging South-South collaboration

Assigned Readings:

Juma, C. (2005). "The New Age of Biodiplomacy," *Georgetown Journal of International Affairs*. Winter/Spring 2005, pp. 105-114.

Johnson, Ken. (2001). Brazil and the Politics of the Climate Change Negotiations. *Journal of Environment & Development*, 10(2): 178-206.

Kulkarni, Jyoti S. (2007). A Southern Critique of the Globalist Assumptions about Technology Transfer in Climate Change Treaty Negotiations. *Bulletin of Science, Technology & Society*, 27(2): 142-153.

Plahe, Jagjit. (2009). The Implications of India's Amended Patent Regime: stripping away food security and farmers' rights? *Third World Quarterly*, 30(6): 1197-1213.

Milstien, J.B., Gaulé, P, and Kaddar, M. (2007). "Access to Vaccine Technologies in Developing Countries: Brazil and India," *Vaccine*, 25(44): 7610-7619.

Desai, Pranav. (2007). Traditional knowledge and intellectual property protection: past and future. *Science and Public Policy*, April 2007, 34(3): 185-197.

Hirst, Monica. (2007). Brazil-India Relations: A Reciprocal Learning Process. *South Asian Survey*, 15(1): 143-164.

Lechini, Gladys. (2007). Middle Powers: IBSA and the New South-South Cooperation. *South Bulletin: Reflections and Foresights*, Issue 6, 16 December 2007, pp. 4-6. South Centre, Geneva. At

http://www.southcentre.org/index.php?option=com_content&task=view&id=453&Itemid=105

Also, explore selected documents from websites of CBD, FP6, IBSA (Joint Declaration 1st IBSA Summit), TRIPS, Kyoto Protocol, Cartagena Biosafety Agreement, etc. [MyCourses].

Session 11: Dilemmas of International S&T Research Collaboration

- Global research networks and alliances
- Trans-epistemic interaction
- Crafting equitable partnerships

Guest Speaker

Assigned Readings:

Bowker, Geoffrey, and Susan Leigh Star. "Social Theoretical Issues in the Design of Collaboratories: Customized Software for Community Support Versus Large-Scale Infrastructure." University of California at San Diego, 2003. [online]

Mellon, C., Ray, M., et al. (2009). A survey of south-north health biotech collaboration. *Nature Biotechnology* **27**, 229 – 232.

Goldman, M. (2001). The birth of a discipline: Producing authoritative green knowledge, World Bank-style. *Ethnography*, 2(2), pp. 191-217.

Cetto, Ana Maria (Ed.). (2004). Knowledge beyond the university boundary. UNESCO Colloquium on Research and Higher Education Policy, Paris, 1-3 December 2004 Knowledge, Access and Governance: Strategies for Change, pp. 1-5.

Also, explore online *your own choice* of a current or past Brown University collaborative international research project.

December

Session 12, Dec. 2 or 7: Wrap-Up, Reflection and Roundtable Discussion of Students' Research Ideas

- There are no assigned readings.

Final paper will be due on December 18. A hard copy should be placed in Prof. Augusto's mailbox in the Taubman Center by 5 p.m., and an electronic copy should also be sent to Geri_Augusto@Brown.edu.