



Tecnología:

¿Para qué? ¿Para quién?

La crítica, las posibilidades y el futuro

¿Has pensado en las consecuencias de la tecnología en la sociedad? ¿Quiénes se benefician y quiénes sufren con cada innovación tecnológica? ¿Podemos escoger los tipos y los usos de la tecnología y dirigirlos para fomentar el bienestar de toda la humanidad? Explora con nosotros los conceptos de tecnologías alternas, ingeniería humanitaria, ética de energía, justicia global y desarrollo sustentable, y la importancia de investigarlos desde una perspectiva interdisciplinaria, incluyendo ideas de las humanidades, la ingeniería y el empresarismo. También aprende sobre dos nuevos cursos el próximo semestre, INTD 3990 y INTD 6095, en los cuales puedes continuar investigando estas ideas y temas afines.

Cada evento del simposio cualifica para horas de CEP y OEG

Simposio Interdisciplinario el jueves, 14 de marzo: Itinerario

8:00am–10:00am Química 123	Introducción a los proyectos interdisciplinarios UPRM: Departamento de Humanidades, GREAT IDEA, CoHemis, CIVIS, ITEAS, Centro, de Negocios y Desarrollo Económico, y el Instituto Universitario para el Desarrollo de las Comunidades
10:30am–12:15pm Física F-B	Care, Engineering, Technology, and Global Justice Dra. Indira Nair, Ingeniería y Política Pública, Carnegie Mellon University
2:00pm–3:00pm Química 123	Service Learning, Appropriate Technology, Capacity Building, and Sustainable Development Dr. John Tharakan, Ingeniería Química, Howard University
3:00pm–4:00pm Química 123	Reactions from Organizing Panel Drs. Hector Huyke, Christopher Papadopoulos, Marcel Castro, UPRM
7:30pm–9:15pm Stefani 113	Appropriate and Alternative, Technology and Life Dr. Carl Mitcham, Filosofía, Colorado School of Mines

*Abstracts, más detalles y pre-registración (no requerida): cohemis.uprm.edu
GREAT IDEA y UNICEF recogerán donativos para la comunidad de Duchity, Haití.*

Auspiciadores:

The Convergence of Science and Culture: Expanding the Humanities Curriculum at UPRM
Graduate Research and Education for Appropriate Technology: Inspiring Direct Engagement and Agency (GREAT IDEA)
CIVIS, CoHemis, y UNICEF



Speaker Biographies



Dr. Carl Mitcham is Professor of Liberal Arts and International Studies, Director of the Hennebach Program in the Humanities, and Co-Director of the Ethics Across Campus Program at the Colorado School of Mines. Publications include *Thinking through Technology: The Path between Engineering and Philosophy* (1994), *Encyclopedia of Science, Technology, and Ethics* (4 vols., 2005), *Oxford Handbook of Interdisciplinarity* (2010, with Robert Frodeman and Julie Thompson Klein), and *Ethics and Science: An Introduction* (2012, with Adam Briggie). Affiliate appointments: European Graduate School, Saas Fee, Switzerland; Center for Science and Technology Policy Research, University of Colorado Boulder; Consortium for Science, Policy, and Outcomes, Arizona State University; Center for the Study of Interdisciplinarity, University of North Texas; Faculty of Social Science

and Humanities, Dalian University of Technology, China; and the Filosofía, Ciencia y Valores program, Universidad del País Vasco.

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Dr. Indira Nair retired from Carnegie Mellon University after 32 years. For the last 12 years there, she was the Vice Provost for Education and Professor in the Department of Engineering and Public Policy. She has designed and taught several interdisciplinary courses including ethics of science and technology, environmental science, technology and decision-making and radiation, health and policy. Her research has ranged over: risk assessment and communication, green design, bioelectromagnetics, education in general and pedagogies for the modern-day literacies such as scientific, environmental and global literacy.

Dr. Nair currently chairs the national Global Learning Leadership Council of the American Association of Colleges & Universities (AAC&U). She advises several universities and colleges on incorporating global and environmental literacy throughout the curriculum. She has served on numerous national committees including National Science Foundation's Committee on Equal Opportunities in Science and Engineering (CEOSE) and on the Division of Education and Human Resources Advisory Committee (EHR), the Educators Advisory Panel of the Government Accountability Office (GAO) and the Board of Student Pugwash USA. Locally, she has been involved in K-12 education and served as a member of the Board of the Pittsburgh Regional Center for Science Teachers, the School Reform Task Force of the Pittsburgh Public Schools, the group

designing the Science and Technology High School, the founding Boards of two charter schools –City High and the Environmental Charter School at Frick Park, and on the Winchester Thurston Advisory Board. She is co-author of a book, *Journeys of Women in Science and Engineering: No Universal Constants*, (Temple University Press, 1997).

She was voted a Women of Distinction by the National Association of Women in Higher Education (NAWE) and the George Morgan Award for Creativity and Innovation in Interdisciplinary Education by Brown University. She received the Doherty Prize for Excellence in Education in 1993, the Undergraduate Advising and Mentoring Award in 1994 and the Barbara Lazarus Award for Culture and Climate in 2005. She founded the Carnegie Mellon Chapter of Student Pugwash to encourage students to think about the social responsibility of science and technology. Her current quests and involvements include: a new scheme for general education including the new literacies; pedagogies for educating for innovation; increasing the inclusion of under-represented minorities across all segments of education; improving K-12 STEM education and bioelectromagnetics. She holds a Ph.D. in Physics from Northwestern University and a Pennsylvania teachers Certificate for high school science teaching.

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Dr. John Tharakan is a Professor at Howard University in the College of Engineering, Architecture and Computer Sciences, where he also directs the Graduate Studies program in the Department of Chemical Engineering. Before joining the faculty at Howard, he worked as a research scientist at the American Red Cross. His research interests and experience are in environmental engineering and biotechnology, appropriate technology development and education, and sustainable development, with specific focus on technologies for water treatment and conservation, renewable energy production using solar and biomass resources, waste management and recovery, as well as on ethics and philosophy of technology. As Faculty Adviser to Howard University's Engineers Without Borders student chapter, he has worked on appropriate water, sanitation and energy technology implementation in developing communities in Senegal and Kenya (<http://www.howard.edu/Kenya>). He has also served as Chair or Co-Chair of an on-going series of International Conferences on Appropriate Technology (2004 – 2012) that have been held across Africa bringing together academics, researchers, practitioners and community groups to facilitate knowledge and technology transfer for social justice (<http://www.appropriatetech.net>).

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Abstracts

Care, Engineering, Technology, and Global Justice Indira Nair, Carnegie Mellon University Thursday March 14, 10:30am – 12:15pm, Fisica F-B

This talk will explore some of the awareness, thinking and competencies that the global citizen of today needs in general. It will touch on the aspects that all of us need to reflect on as we design or make decisions everyday about technology— care and justice in its design and use. Starting with a definition of care, the talk will articulate some properties – complexity, systems, interdependence - of the technological systems that we have come to depend upon and how we could design, use and spread these with care and justice for a sustainable world. I would like us all to reflect on the role of technology and science in today's living, in our thinking, and how to do it with care in our individual dealings and how care at this level is a pre-requisite to global justice in the deployment of technology. And the primary purpose of this reflection is to think about whether we are asking the right questions, solving the right problems, and bringing the right perspectives, starting from our various disciplinary points of view.

Appropriate and Alternative, Technology and Life Carl Mitcham, Colorado School of Mines Thursday March 14, 7:30pm – 9:15pm, Stefani 113

What is “appropriate” about appropriate technology? The question requires more than a technological or engineering response. The abbreviation of “appropriate technology” (AT) can also be read as “alternative technology.” The second reading suggests a more radical approach to the same think about what we are doing as we replace the natural with the built environment and turn the world into an artifact. It is thus useful to consider the dialogue between these two terms — using two approaches to one particular kind of technology, energy technology. Whether and to what extent we can develop an appropriate or an alternative energy technology will be crucial to the kind of world-artifact we will construct. This contrast will further distinguish two approaches to an ethical assessment of energy: Type I energy ethics is grounded in a belief that increases in energy production and use are both humanizing and civilizing; Type II energy ethics questions this belief and argues that beyond a certain point, energy production and use become counterproductive. Our technological way of life is currently determined by Type I energy ethics, although Type II energy ethics deserves a hearing. A provocative illustration of the Type II approach to energy will reference energy ethics and policy in China. In the end, I will appeal for the pursuit not just of an appropriate technology but an alternative technology and way of life.

Service Learning, Appropriate Technology, Capacity Building and Sustainable Development

John Tharakan, Howard University

Thursday March 14, 2:00pm – 3:45pm, Química 125

Service learning (SL) has been formally defined as engagement of students in course-based, credit-bearing educational experiences in which students' participate in a service activity and are provided academic framework and context to engage in guided reflection on the service activity. In this lecture, I will present and report on the design and implementation of several appropriate technology (AT) based development projects that were transformed into service learning experiences with rigorous academic content. These projects included the building of a shelter for a girls orphanage in Panama, the installation of a solar photovoltaic (PV) based energy supply system for a remote rural village community in Senegal, and the construction of water treatment and collection systems in a village in Kenya. These projects were originally proposed and developed as straightforward service projects for the Howard University chapter of Engineers Without Borders-USA (EWB-USA). EWB-USA projects are student driven, community-centered and based in developing countries, focused on improving the quality of life. These projects enable college students to engage in service activities, drawing upon their engineering education and training, and focused on assisting the communities the student teams elect to engage with. The student-driven nature of the projects requires that student teams take leadership in community engagement, community selection, project conceptualization, development and implementation. Projects funds also need to be raised by the student teams. Through the development of independent study service learning courses, student volunteer participants can leverage their service into academic learning and credit. In this seminar, we will discuss service learning and appropriate technology and outline the transformation of service activities into independent study service-learning engineering courses. The seminar will suggest a model for capacity building in developing economies through the development of such student organizations and the implementation of linked service learning courses in engineering departments, schools and colleges in a country. Leveraging the teaching and learning of the young can rapidly provide enhanced capacity for engagement in development work and projects. Broad implementation of such a model across engineering programs in a given country has the potential to substantially increase capacity building efforts and impact to implement the necessary interventions that will lead to sustainable development.

Keywords: Service Learning, Capacity Building, Appropriate Technology and Sustainable Development

Note: A version of this paper was presented at International Conference on Sustainable Development and Governance: Building Commerce and Communities, Amrita University, Coimbatore, India, December 10 – 13, 2012.