OPEN SOURCE SOCIAL SCIENCE: WEB TOOLS FOR COLLABORATIVE ANALYSIS OF ETHICS AND TECHNOLOGY

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ABSTRACT
This paper describes work-in-progress to build an interactive, data-base driven website that creates a space for collaborative thinking about the ethical dimensions of information technology. The site is associated with the Center for Ethics and Complex Systems at Rensselaer, which supports social science research that develops data, methodologies and theory to understand how ethics are affected by rapid technological development. The CECS website materializes a commitment to inclusion of diverse voices in the development of new ethical analyses. Failure to include diverse kinds of expertise in the development of ethical analyses is particularly problematic in an era when so many people – including social scientists themselves – acknowledge that ways of thinking about society have not kept pace with its technical development.

Keywords
web collaboration, database-driven websites, open-source, ethics

NETWORKED ETHICS: THE CENTER FOR ETHICS AND COMPLEX SYSTEMS

Information technology is changing how society is structured, and how wealth is created and distributed. Information technology is also changing the way people think, by changing the way knowledge is produced, evaluated and applied in a range of areas – from science to finance to urban planning. These changes have profound ethical dimensions. New flows of data, combined with new modeling and simulation techniques, for example, are transforming how decisions are made in both private and public organizations. Thoughtful consideration of a range of issues still needs to be advanced, among researchers and in the public sphere. Social scientific methodologies that encourage this need to be developed.

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Conventional ways of disseminating social scientific research are too slow and narrow to have a broad impact on new technologies as they are being developed. The challenge is to speedup the feedback loop between social scientists and the many people their research should speak to – providing opportunities for thoughtful evaluation of new technologies while there is still an opportunity to redefine options and maximize social benefit. This is the goal of the interactive website being built by the Center for Ethics and Complex Systems (CECS) at Rensselaer.

CECS supports research to understand how ethics have been affected by rapid technological development. Programmatic engagement with theories of complex systems that have emerged in different fields promote the interdisciplinarity of the research, while encouraging attention to many variables, scales and interactions. The objective is to develop data and theory for the information technology arena that parallels that undertaken by the National Institutes of Health ELSI (Ethical, Legal and Social Implications) Research Program to address the new genetic technologies. Like exemplary ELSI projects, the CECS project will produce new empirical data, new concepts and theories, new ways of enhancing collaboration, and new ways of disseminating social scientific research. The objective is to build modes of "ethical literacy" appropriate for the high-technology worlds in which we now live – complex worlds in which preset ways of thinking about the world provide imperfect guidance.

CECS projects are designed to encourage an unusual amount of collaboration, at all stages of the research – among social scientists conducting field studies around the world; with natural scientists and engineers; with IT professionals; and with diverse members of the public. Regular roundtable discussions draw members of the public and researchers from many disciplines into the research as it develops – to refine research questions; to interpret data; and to formulate policy recommendations for maximizing the social benefits of information technology. The CECS website will provide an opportunity to open these discussions to even broader audiences.

CECS is run by an interdisciplinary team of social scientists in the Department of Science and Technology Studies (STS) at Rensselaer Polytechnic Institute – including an anthropologist (Kim Fortun), a historian (Mike Fortun), a political scientist (Edward Woodhouse), a cybernetics scholar (Ron Eglash), and STS graduate students Virginia Eubanks, Alex Sokoloff and Erich Schienke. Alex Sokoloff is designing the back-end of the website described here. Virginia Eubanks and Erich Schienke are designing the interface.

OPEN-SOURCING ETHICS: THE CECS WEBSITE

With the CECS website, we're hoping to create a space for ethical thought that responds to our changing understandings of how complex, interconnected, highly technological situations work. The site will provide a diverse audience – including CECS participants, other researchers, teachers, community activists, policy makers, journalists and others -- with non-profit tools, content, and interpretation for ethical engagement with issues emergent from rapid technological development. By instituting an issue-based site, we're hoping to link university researchers to initiatives for progressive social change, and to provide a reliable public source of social science information. Sharing open-source collaborative research tools is also a priority.

Form

This issue-based and database-driven site will operate on an "open source" aesthetic. The functionality of the site will be based on many of the principles of the open source movement, which combines well with many of the abiding interests of the CECS project: emergent systems, new ethical understandings, different views of the same data and situations, distributed complex infrastructures, and collaboration at all levels of expertise. The Open Source Model guarantees that any user (generally of software, but in our case, of a collaborative data set) has the freedom to study how the data set is put together and to adapt it to their own needs. In our case, we hope this also includes the freedom to improve the data set by making contributions to it. Access to the source material is a necessary precondition for these freedoms.

Function

The CECS website will address three primary audiences: a general public, secondary and undergraduate teachers, and CECS researchers. The site's front-end will present a rotating selection of topics (our first set may include Quantification and Modeling, Commercializing Data, Workforce, Pace of Change, Digital Divide, and Simulation and Public Decision Making), each managed by a single researcher. Around these concepts, we will build a structure to allow high-level access to all kinds of relevant data: from ethnographic field notes, completed interviews, case studies and published papers to relevant policy documents, annotated links and bibliographic references, curricula and data simulations. Interactivity will be key: each section will allow the user to manipulate and discuss data through threaded discussion and our "simulation labs." We also hope to be able to allow site users to add their own analyses and reflections to the website, broadening and deepening the data set itself. The heart of the system is an open-source database that will allow for quick and rigorous indexing and searching of what will surely become an enormous data set.

Features

- *Dialogue & Discussion Forum:* The discussion forums will allow researchers from many disciplines, teachers, community activists and others to engage in dialogue about complex ethical issues embedded in technological innovation. The section will include topically-organized threaded discussion forums, archives, and mailing lists whose maintenance can be facilitated by instituting an anonymous remail-style architecture that connects people in a point-to-point network, instead of using top-down administration (for an example of this architecture, see RTMark's mutual fund model at http://www.rtmark.com).
- *Primary Documents, Interviews, Case Studies, and Published Articles:* The CECS website will allow access, indexing, and search of primary documents and interview transcripts as well as more finished products like case studies (which will be cross-linked into the section of the site devoted to secondary and undergraduate teachers) and published articles by CECS researchers and CECS website users.
- *Simulation Lab:* At CECS, we're interested in developing critiques of how elite practices are supported by modeling as a rhetorical device, and in developing our own critically-informed models. The CECS website will allow users to run transparent simulations of their own data as well as view simulations designed by CECS researchers. The website will also contain articles and other resources that encourage critical thinking about simulations.
- *Relevant Policy Documents:*The CECS website will provide a place to link basic social science research to practical work for progressive social change. Making policy documents relevant to each topic easily accessible in one place leverages the power of the web and of databases for this purpose.
- *Annotated Bibliographies and Annotated Links:* The CECS website will provide a means of exchanging information in a format compatible with the popular bibliographic software EndNote. Users will be able to search thorough a large selection of relevant links and bibliographic references and compile their own lists of resources for use in classes, curricula, and research.

WHAT IS SPECIAL ABOUT DATABASE-DRIVEN WEBSITES?

A relatively recent phenomenon among Internet technologies, the database-driven web site offers a number of ways of collecting and disseminating information that static web pages and electronic mailing lists, to take two examples, do not. Among the strengths that this type of technology offers are:

- *Sophisticated ways of sharing information:* Individuals can submit content to the web site in a variety of ways, and the information can be searched and retrieved by others in a variety of ways. Discussion forums, bulletin boards, classified ads, are among the more conventional ways of using this capability on database-backed web sites.
- *Online, public access to large databases:* Database-driven websites can reverse the surveillance capabilities usually associated with governments and corporations. The Environmental Defense Fund's Scorecard website is an exemplary example. This website publishes a large database of information culled from the EPA's Toxic Release Inventory, detailing releases of chemicals into the environment by thousands of individual manufacturing facilities. Users have unprecedented access to environmental information, tools for interpreting the information, and ways to protest toxic emissions through email to government agencies and offending corporations.
- *Archiving:* Properly designed, database-driven web sites provide ever-changing (typically ever-growing) content, without losing the state of the system at a given point in time. Content that is taken off-line remains stored as a database record, and the content of the web site on a given date in the past can be restored by a simple database query. This possibility counteracts the ethereality that characterizes electronic media.

One of the things that makes this project unique is our commitment to developing new tools for collaborative social science research as well as an in-depth and accessible data set. Database-driven web sites are now the backbone of e-commerce, and they are also coming into use by sophisticated non-profit and activist organizations. This type of technology seems to be ideal for the type of distributed research community envisioned for CECS. However, the cost and complexity associated with running database-driven web sites makes them, at present, projects suited to organizations with substantial financial resources. The use of a web architecture that is entirely based on open-source software will help reduce the costs associated with creating the web-site, and the site's technological infrastructure will exemplify the broader goals of CECS. If the tools used in the web site prove to be popular and effective, they could be made available to a number of research communities on a centralized server as a way to further reduce costs.