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SCIENCE+ TECHNOLOGY

INNOVATION PROGRAM

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REINVENTING TECHNOLOGY ASSESSMENT

A 21ST CENTURY MODEL

USING CITIZEN PARTICIPATION, COLLABORATION AND EXPERT ANALYSIS TO INFORM AND IMPROVE DECISION-MAKING ON ISSUES INVOLVING SCIENCE AND TECHNOLOGY

Excerpt from Richard Sclove, *Reinventing Technology Assessment: A 21st Century Model* (Woodrow Wilson International Center for Scholars, April 2010)

Lowell, Massachusetts Scenario Workshop on Urban Ecology and Democracy (2002).[181]
A scenario workshop is a European pTA process in which selected stakeholder representatives and laypeople critique competing, expert-prepared future scenarios. The scenarios use engaging narratives of daily life to describe alternative social and technological means of advancing a societal objective, such as creating more ecologically sustainable urban communities. Workshop participants use the scenarios as a starting point for crafting desired visions and action plans for their own communities. Among TA methods, scenario workshops are intriguing in their ability to consider the combined direct and indirect repercussions of complexes of seemingly unrelated technologies (e.g., urban energy, transportation, food production, water, sewage and garbage systems).

Seventy city residents, including business and government representatives, technical experts and members of citizen-action groups, participated in the two-day Lowell scenario workshop. The project modified the European scenario workshop format by adding several new steps in which participants were asked to evaluate the initial expert scenarios, as well as their own visions and action plans, using a set of democratic design questions (Table B, below). To keep that task manageable, the questions were divided among participants so that each person used one, or at most two, questions. (All participants were asked to consider the concluding question, no. 19). As a contribution toward the methodology, the participants also evaluated the questions after having used them. The Lowell scenario workshop represented a pioneering attempt to ensure that multiple technologies advance their intended aim (in this instance, urban environmental sustainability), in a manner compatible with maintaining a robustly democratic civil society.

Participants presented their conclusions at a city hall press conference hosted by Lowell's mayor. The mayor and city planners expressed eagerness to incorporate the results into their planning processes.

Table B. Questions to Help Examine the Effects of Technologies upon a Community's Democratic Structure[182]

One purpose of the Lowell scenario workshop is to gauge the effects of technology upon communities through the help of the social and political questions listed below. We've illustrated the meaning of each question with a technological example. Please note that each question can apply to many different kinds of technologies, not just to the one technology that we use in each example.

Take the first question, Individualism and Commonality: Although the illustrative example mentions carpooling, many other technologies besides cars or other transportation technologies can affect how much time we spend alone versus interacting with other people. Just think of the difference in social interaction that happens when someone: (a) washes clothes at home with a washing machine; (b) goes to a laundromat; (c) takes clothes to a dry cleaning shop; (d) scrubs clothes collectively at a village washbasin; (e) leaves dirty clothes in a hamper for a paid domestic employee to wash; etc. So although the example mentions carpooling, in reality the question -- like all of the table's questions – can apply to many other kinds of technologies as well.

Table B. continued

TECHNOLOGY & SOCIAL RELATIONS

1. Individualism and Commonality — In some major urban areas, designated "carpool lanes" on highways have prompted on-the-spot carpooling, where commuters leave their cars to ride with complete strangers into city centers. **Would any technologies in the scenario affect how, and how often, you would interact with other people?**

2. Forming Groups — In the past, large factories producing automobiles, refrigerators and other durable products made it easy for workers to form groups, like unions or bowling teams. **Would any of the technologies in the scenario affect peoples' ability to form groups?**

3. Cultural Diversity — New cotton farming technologies, combined with expanded factory production in northern U.S. cities, brought millions of African Americans out of the South during the first half of the 20th Century. This "Great Migration" helped Rhythm & Blues music gain acceptance in mainstream culture. Some historians think this helped the civil rights movement during the 1960s. **Would any technologies in the scenario affect your exposure to different cultures?**

4. Fairness — People with physical disabilities have enhanced their involvement in social life by lobbying for "barrier-free" design solutions, such as wheelchair-negotiable buses, sidewalk curbs and buildings; Braille-encoded elevator buttons; public phones with adjustable volume; and so on. **Do any of the technologies in the scenario affect the economic or social opportunities of disadvantaged groups?**

5. Influence — Dissidents have used the Internet and text-messaging to challenge authoritarian political regimes. **Would any technologies in the scenario redistribute power and influence in society?**

TECHNOLOGY, PERSONAL GROWTH & SOCIAL LEARNING

6. Personal Growth — The Internet is making it possible for increasing numbers of people to access free, online instruction in a huge variety of topics, ranging from vocational and professional skills to artistic and even spiritual development. **How would the scenario's technologies affect peoples' ability to choose career paths and to develop other talents?**

7. Burdens — Household recycling and composting are great for the environment, but can also be time-consuming. **Are there technologies in the scenario that create burdens or constraints for people? Would some people shoulder more of these burdens than others?**

8. Citizenship — Many suburbanites commute to work in a different town and stay home indoors at night. They watch television and shop via catalogs or the Internet, and may feel little responsibility to their neighbors. **Would any of the technologies in the scenario increase or lessen peoples' readiness to act as responsible citizens?**

Table B. continued

9. Social Learning — The ancient Greek philosopher Socrates would have loved the Internet. It makes it possible to ask questions and learn interactively with people nearby and across the world. **Would any of the technologies in the scenario affect opportunities to learn about the world and to share ideas with other people?**

TECHNOLOGY & GOVERNANCE

10. Centralization/Decentralization — If a city decides to build an international airport, it becomes subject to regulation and oversight by the Federal Aviation Administration (FAA). That removes some decision-making power from local authorities. **Do any of the technologies in the scenario require state or federal involvement?**

11. Exporting Harm — Lowell currently sends its solid waste to be burned downwind from the city. **Would any of the technological solutions employed in the scenario create problems outside of Lowell? Could this lead to state or federal intervention?**

12. Institutional Responsiveness — Everyone knows the frustration of encountering modern business voice-mail systems that seem custom-designed to make it impossible to talk with a living person. **Would any technologies in the scenario affect the responsiveness of important institutions (such as businesses, financial institutions, and government agencies)?**

14. Civil Rights and Liberties — The civil rights movement gained moral and political force when it achieved national television exposure in the 1960s. **Would any of the technologies in the scenario affect the protection of civil rights and liberties?**

TECHNOLOGY & SOCIAL SUSTAINABILITY

15. Economic Specialization — It can be risky to rely too heavily upon a single industry to fuel economic growth. Detroit relied heavily on the automobile industry during the 1970s, and this led to problems when the industry confronted foreign competition. **Do any of the technologies in the scenario affect the diversity and robustness of the local economy?**

16. Flexibility — Some architects have designed buildings with moveable walls, so that apartments can be reconfigured as families grow and shrink. **Are the technologies in the scenario flexible, so that people would be able to change their minds about how they want to live?**

17. Vulnerability — The City of Boston transports most of its drinking water from the Quabbin Reservoir in western Massachusetts. This technology brings cheap water to millions, but may be vulnerable to terrorist sabotage. We may have to restrict civil liberties to prevent such sabotage in the future. **Are any technological solutions in the scenario vulnerable to catastrophic sabotage?**

Table B. continued

18. Democratic Security — Reliance upon gas-fueled automobiles and foreign oil imports compels the U.S. to maintain a strong military presence in the Persian Gulf. This has had complex consequences for international peace and security. **Do any of the technological decisions in the scenario affect international peace, security or democracy in other nations?**

TECHNOLOGY & UNPLANNED CONSEQUENCES

19. Suppose the scenario is fully realized? What would be the problems?