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Geoprocessing, Government Sustain Civilization

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Geodata and geoprocessing are the information infrastructure of physical infrastructure. Planning, building and maintaining water, sewer and trash removal systems, roads, airports, dams, harbors, facilities for communication and energy distribution, soil conservation, forestry management, mineral exploration, etc. – the physical supports of civilization – depend increasingly on GIS, remote sensing, automated mapping/facilities management and Global Positioning System technology.

I was puzzled and disturbed the first time I saw Renaissance paintings depicting medieval peasants among the overgrown ruins of once-magnificent Roman aqueducts. How does progress reverse? In *The Future of Capitalism*, a recent book by Massachusetts Institute of Technology economics professor Lester Thurow, the author notes, "In the Dark Ages, the public was squeezed out by the private," and that U.S. public infrastructure spending has been cut in half in the last two decades. He makes the point that "government must represent the interests of the future to the present," because that's not inherently the responsibility or tendency of capitalism.

Two years ago I heard former Wisconsin senator Gaylord Nelson say, "Business is a wholly owned subsidiary of the environment." He might have added "and of civilization." Economist Thurow writes, "Free markets require a supportive physical, social, mental, educational and organizational infrastructure." Adam Smith believed this, too.

One of the beauties of GIS is its facility for analysis and display in the temporal domain. Never have humans had such a powerful tool for predicting and planning. This unique capability will help our industry, because a long-range view militates for investment in physical infrastructure and environmental protection, key markets for GIS. This will happen on desktops and projection screens in planning rooms, but it also could happen on TV. Thurow again: "Values are not, and will not be, inculcated by the family, the Church or other social institutions They are, and will be, inculcated by the electronic and visual media."

Everyone should be disturbed by this. TV is part of the problem, notorious for inculcating short attention spans and overconsumption. But electronic media could be used to popularize dramatic environmental and economic geographic "what-if" animations.

Thurow: "In many cases to spread and accelerate economic development, infrastructure (transportation, communication, electrification) has to be built ahead of the market-but that means a long period of time before capitalistic profits are earned. Capitalists won't, and shouldn't, wait for those profits to appear. Capitalistic infrastructure can only be built behind, with, or slightly ahead of the market." The Open GIS Consortium is developing, with mostly private funds, a standards infrastructure for interoperable geoprocessing, slightly ahead of the market. In contrast, most physical infrastructure needs to be publicly funded.

Consider the following:

- At the same time that large numbers of people are investing an unprecedented amount of money in businesses, U.S. public infrastructure and infrastructure investment are declining. The tax code should channel more of this capital into municipal and other government bonds.

- Tax systems that demotivate work and investment ought to be replaced with tax systems that demotivate consumption of nonrenewable resources and pollution of the environment (see Paul Hawken's *The Ecology of Commerce*). Full implementation will require international cooperation, so it's a long-range goal. But it's essential. (It also will, of course, require geospatial analysis.)
- Topsoil continues to thin and water tables continue to fall in the United States and elsewhere. Rainforests are being destroyed by poor people and cattle companies making good short-term economic optimizations. These and other environmental tragedies can't be averted without government intervention and geoprocessing.
- People leave poor countries to live in rich countries. Part of the solution: Support environmentally and socially informed infrastructure development in developing countries.
- People perceive governments to be inefficient in delivering services, so they don't want to pay the taxes necessary for infrastructure. Part of the solution: Improve government efficiency with better-spatially enabled-information systems.

Geoprocessing and good government are keys to prosperity in the next century. Sometimes it seems that information technology and a thriving private sector are making government irrelevant. Indeed, government is in crisis and needs to adapt to new realities, but if the governed give up on government, civilization's infrastructure will decay and a bitter New Medievalism surely will settle upon our children and grandchildren. Few technologies are so inherently civilizing as geoprocessing, because geoprocessing supports civilization's physical body as well as the deep historical and broad global perspective of civilized people.

References

Thurow, L. 1996. *The Future of Capitalism: How Today's Economic Forces Shape Tomorrow's World*. 1996. William Morrow & Co., New York.

Hawken, P. 1993. *The Ecology of Commerce: A Declaration of Sustainability*. HarperBusiness, New York.

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