The Ghost in the Modem

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For Architects of the Info-Highway, Some Lessons From the Concrete Interstate

Vice President Gore envisions the information superhighway as the second coming of the interstate highway system championed by his father, former U.S. Senator Al Gore, a generation ago. Let us hope that the junior Gore is proven wrong. Rush-hour traffic jams, gridlock, garish plastic-and-neon strips, high fatality rates, air pollution, global warming, depletion of world oil reserves -- have we forgotten all of the interstate highway system's most familiar consequences ?

It's not that Gore's analogy is wrong, only that his enthusiasm is misplaced. Comparing the electronic and asphalt highways is useful -- but mostly as a cautionary tale. Building the new information infrastructure will not entail the degree of immediate, physical disruption caused by the interstate highway system. But sweeping geographic relocations, and accompanying social transformations, seem probable. And the risk of inequity in contriving and distributing electronic services -- or, conversely, imposing them where they are not wanted -- is clear.

Indeed, disparities in access to new information systems have already begun to surface. A study released this past week by a group of public interest organizations, including the National Association for the Advancement of Colored People and the Center for Media Education, notes that low-income and minority communities are underrepresented in U.S. telephone companies's initial plans for installing advanced communications networks.

Unequal access is only the most obvious among many social repercussions that may lie in store for us. The real history of the interstate highway system suggests how we can think about and control the vast implications of new technologies and a new national public infrastructure.

It is widely assumed that Americans' infatuation with cars led to the construction of America's superhighways. But actually when Congress passed the Interstate Highway Act in 1956, car sales were slack, and there was no popular clamor for building a new road system. At the time only about half of American families owned an automobile; everyone else depended on public transportation. Congress was responding to aggressive lobbying by auto makers and road builders, plus realtors who saw profits in developing suburban subdivisions.

The act's key provisions included support for bringing freeways directly into city centers and earmarking gasoline tax revenues for highway construction. As the interstate highways were built, city and suburban development adapted to the quickening proliferation of autos. Soon more Americans found themselves forced to buy a car in order to be able to shop or hold a job. The Highway Trust Fund, by assuring the rapid atrophy of competing public transit systems, bolstered this trend.

Thus the asphalt highways -- and the society around them -- are a reflection of successful lobbying by powerful business interests and external compulsion, not simply the free choices of consumers. There is no guarantee that the process of wiring consumers and employees into the electronic highway system will be different.

The effects of the interstate highway system on American communities were profound, especially in the cities. As historian James Flink notes, "ambitious programs for building urban freeways resulted in the massive destruction of once viable poor and minority neighborhoods". In other cases, new highways encircled poor neighborhoods, physically segregating minorities into marginalized ghettoes.

Gradually, a black and Hispanic middle-class did emerge. Its members too fled along the interstate to the suburbs, further draining economic and cultural resources from the inner city. This contributed to the emergence of a new social phenomenon : today's desperately deprived, urban underclass.

Elsewhere the effects were subtler but still significant. The noise and danger from growing numbers of autos drove children's games out of the street, and neighbors and families off their front porches. Before long, suburbs without sidewalks came to signal an unprecedented paucity of local destinations worth walking to. Suburban housewives found themselves leading increasingly isolated daytime lives at home.

Highways made shopping malls possible, enabling franchise and chain store sales to boom. But this sapped downtown centers. For some teenagers and senior citizens, today's anonymous, consumption-mad expanses provide a semblance of community space -- having swallowed up the general store, the soda fountain, the Main Street sidewalk, and the town square. There is ample danger of the new electronic technology extending these losses.

Remember too that it is easy to romanticize new technology. The popular arts glorified life on the highway. People read Jack Kerouac's *On the Road*, watched *Route 66* on television, and recall the Merry Pranksters' psychedelic bus-capades during the '60s. In fusing alienation and rebellion with youthful exuberance, each of these foreshadows contemporary cyberpunk culture. Yet real-life experience on the interstate is mostly banal and uneventful. McDonald's, Pizza Hut, and Wal-Mart look about the same wherever you exit.

There are also political ramifications of a vast new public infrastructure. Interstate highways contributed to national and even international economic integration. But while GNP soared, mom-and-pop production and retailing declined. That meant greater local dependence on national and global market forces and on distant corporate headquarters -- powers that communities simply couldn't control. The locus of effective political intervention thus shifted toward more distant power centers. But because those are realms in which everyday citizens cannot be as effectual as in smaller political settings, democracy was impaired.

If the growth of the highways is revealing, so too is the opposition to freeway construction that emerged. As citizens became more politically mobilized during the 1960's and early '70s, opposition to relentless highway expansion arose from environmentalists and from local communities, both rich and poor. Transportation engineers reeled at the specter of upright citizens rejecting their good works. Many current telecommunications engineers and true-believing entrepreneurs are no less convinced of the unalloyed beneficence of their art.

The importance of the analogy between the information and asphalt highways lies in the political procedures that create them. What if a wider range of people, including non-car owners, had been involved in transportation planning all along ? Considering the alternatives envisioned by critics such as Lewis Mumford, it seems likely we would have a smaller and different road system today. As in Europe and Japan, there probably would have been greater investment in public transit. Modern America might exhibit less sprawl, less dependence on foreign oil, and more cohesive urban neighborhoods.

Three lessons for the construction of the information superhighway suggest themselves :

- **No Innovation Without Evaluation** : to help reduce adverse social impact, the federal government should mandate evaluated social trials of alternative electronic services. Analogous to environmental

impact statements, these trials should precede full-scale deployment of any major components of new information infrastructures.

- **No Innovation Without Regulation** : we should conserve cultural space for face-to-face social engagement, traditional forms of community life, off-screen leisure activities and time spent in nature. How about a modest tax on electronic home shopping and consumer services, rebating the revenue to support compensatory, local community-building initiatives ?
- **No Innovation Without Participation** : a number of European nations are out-competing America in including lay people in technology decision-making. For instance, the Danish government appoints panels of everyday citizens to cross-examine a range of experts, deliberate among themselves and then publish their own social assessments of technological alternatives. Sweden, Norway and Germany have pioneered processes for involving workers directly in designing new production systems.

The coming revolution in information systems is going to change life for everyone -- including the multitude who, by circumstance or choice, never use computers. It is imperative to develop mechanisms for involving all segments of our society in designing, evaluating and governing these new systems.

Data highway enthusiasts may see such measures as wasteful obstructions of market forces. But what entrepreneurs call red tape is really democracy in action.