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Technology and Planning: A Note of Caution

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This issue of the *Berkeley Planning Journal* considers the interaction between technology and planning. Such discussions often focus somewhat optimistically on the use of information technologies such as geographic information systems (GIS), computer modeling, visual simulation software, or the Internet. The assumption is that these are simply tools that planners employ, or that, by extension, society in general employs to meet particular needs. A related assumption is that these and other technologies are value-neutral, rather than actively shaping the goals and agenda of the profession. In this brief essay I would like to take a somewhat different perspective on the subject. I will argue that technology is a dynamic force that restructures both cities and the mindsets of city planning far more than we usually realize, and that we as planners must become better at stepping back from technology and putting it in its place. As Lewis Mumford warned in works such as *Technics and Civilization* (1934), much of the influence of technology in the past century was not for the good. It led to overly rapid urban expansion, an inhuman scale of development, sterile modernist architecture, unprecedented concentrations of economic power, ecological devastation, and many other destructive phenomena. The challenge to planners in the twenty-first century then is to become more aware of the ways in which technology shapes our profession and cities themselves, better at managing the introduction of new technologies (for example new transportation systems), and more sophisticated at balancing technological methods of analysis with more basic tools such as common sense, direct observation, and compassion.

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The enormous influence of technology on cities themselves has been well documented, and in many cases has been linked with the growth of corporate power over modern life. Although information technologies may receive the most attention these days, transportation and infrastructure technologies have had the largest effect on the physical landscape. The impact of communications technologies has been more on economics and society than on development per se, although certainly it has helped fuel some spatial changes such as the decentralization of employ-

ment to Edge City locations.

Far and away the largest technological influence on cities and towns has been that of the automobile, which has fundamentally reshaped the spatial form of the region, the structure of neighborhoods, much economic activity, and social relations within the metropolitan area. Just to take one example, without the automobile the regional mall and much of today's big-box retail economy would be inconceivable.

Streetcars, commuter trains, and even the omnibus initiated metropolitan physical restructuring in the nineteenth century, leading to dispersion along transportation corridors. However, these technologies still reinforced place-based community in which people spent significant amounts of time walking through the public landscape, sharing public transportation, and patronizing local businesses. In contrast, the automobile led to a radical transformation of urban space and experience, emphasizing individualistic activity and privatized space. This new technology also led to an unprecedented political coalition of manufacturers, suppliers, road building interests, and oil companies. The resulting juggernaut gained wide-ranging control over urban development, most famously by helping create an environment in which streetcar systems could not survive and then actually tearing them out, but also by shaping national policy in ways that still continue.

Large-scale infrastructure is perhaps the second most important technological influence on urban development. Although not glamorous like today's computer technologies, dams, waterworks, sewage treatment facilities, roads, and electric and communications networks have enabled modern metropolitan development, and continue to make possible new forms of urban growth. For example, an enormous system of waterworks, combined with the 20th Century technology of air-conditioning, is making possible the current explosion of development in the American Southwest.

The elevator is also frequently cited as a crucial urban technology (enabling buildings of more than five or six floors). However, compared to that of motor vehicles and large-scale infrastructure, its influence is minor. Elevators allow taller, denser cities, but as shown by many parts of Paris, London, and Manhattan, very dense cities are possible with walk-ups alone. The elevator's main influence has been on the urban skyline, allowing corporate headquarters to become the visual focus of the urban landscape.

The much-vaunted communications technologies of the past 150 years—the telegraph, telephone, television, and now the fax and Internet—have arguably had more effect on economic, social, and cultural development than on urbanization and planning per se. As Manuel Castells and others have shown, these devices facilitate the emergence of a global economy and society. This globalization profoundly affects our lives. However, this process is a long and ongoing one, and the influence of communications technologies on the physical form of cities themselves has been limited. Telecommuting, for example, has yet to fuel urban decentralization to the same extent as actual commuting. Spatial deconcentration of cities—perhaps the dominant trend of the past century—began to occur long before the arrival of most of the information technologies we use today.

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Technology has played an equally large but far less examined role in the planning profession itself, particularly in encouraging the growth of a detached, scientific mindset, in reinforcing a view of the planner and academic as objective expert, and in promoting the supremacy of social science and economic methods over design and advocacy.

The spread of the automobile in the 1920s led not just to new forms of suburbanization, but to new priorities and methods in planning. Road-builders and engineers, epitomized by Robert Moses in New York, came to dominate many urban bureaucracies. The emerging planning profession adopted quantitative analysis as a way to establish its niche, in contrast to the aesthetically oriented approach of architects, landscape architects, and others involved in the City Beautiful movement, or the humanistic orientation of lay authors such as Mumford. As planners such as Harland Bartholomew formed consulting firms they relied on tabulation of housing, demographic, circulation data as the basis for recommendations on new infrastructure and policies to accommodate the automobile and urban growth in general. Newly established city planning offices did the same to gain legitimacy.

Later, the spread of computers beginning in the 1960s reinforced the abstract, quantitative focus of urban economists, social scientists, regional scientists, transportation planners, and many other branches of the profession. New technology went hand-in-hand with a modernist, scientific worldview emphasizing quantitative data and a cautious, expert role for planners. As Walter Isard put it in 1975, "A regional scientist

is not an *activist* planner. ..The typical regional scientist wants to surround himself with research assistants and a computer for a long time in order to collect all the relevant information about the problem, analyze it carefully, try out some hypotheses, and finally reach some conclusions and perhaps recommendations. His findings are then passed on to key decision-makers."

The tendency of technology to reinforce an expert role for planners and distract them from active engagement in real-world problems continues to this day. It is all too easy for planning researchers to closet themselves in a computer lab working on GIS systems, spreadsheets, transportation demand models, input-output tables, or regression analysis, and not to gain skills of actually looking at urban places, understanding the lives of those who live in them, and collaborating with others to bring about change. The technocratic approach of many economists and social scientists within the planning profession amounts to a religion or worldview. Information about the urban world that is irreducible to economic or quantitative values is discounted. Advocacy planning and normative judgment are looked down upon. In contrast, I would argue that there is an ethical responsibility for planners to become leaders in addressing today's critical urban problems, and to confront the entrenched power of corporations and land developers that have benefited enormously from technology.

Meanwhile, reliance on technology and technocratic discourse within the planning profession serves to distance the public from decision-making. Transportation planning is probably the worst culprit, though some economic and environmental analyses are equally complex. Impenetrable computer models, acronyms, and highly technical terminology camouflage decisions that determine the growth patterns of entire metropolitan regions. It has been extraordinarily difficult for the public to know what assumptions are being structured into the models and to develop alternative policy directions in similar technical language and detail. Even if all the assumptions fed into models could be clarified, the process would still be highly complex and difficult for the public to scrutinize. Just as importantly, the role of planners as technicians and scientific experts—rather than advocates and humanists—would remain central to the planning process. Last but not least, technology serves as a magnet for research dollars, and so tends to skew academic planning agendas in certain directions. The amount of money available for transportation research in general, and intelligent transportation systems in particular, is a

case in point. Research using GIS also soaks up many available dollars. Meanwhile, qualitative research that doesn't rely on technological methods is often discounted and unfunded.

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The message of this brief essay is one of caution. We must watch technology carefully both to make sure that its power does not overwhelm social and environmental values within urban development and to ensure that its concomitant mindsets do not dominate the planning profession itself. I am optimistic that planners in the twenty-first century can do this. We have learned much from the excesses of the past century, in which entrancement with technology and scientific method was a critical part of the now discredited modernist enterprise. But we still need much practice in balancing technical tools with other methods. We still need to be better at stepping out of technocratic roles as planners to take leadership in addressing urban problems. And equally important, we need to limit the extent to which technology reinforces economic power in ways that harm cities, the people in them, and the natural environment.

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