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Urbanization and Communications

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Urbanization and Communications

MELVIN M. WEBBER

We are living in the midst of a golden age of scientific discovery, technological invention, and creativity in the arts. Never has a society learned so much so quickly. Never has so large a proportion of any population been engaged in the intellectual pursuits. Never have the means for satisfying intellectual curiosity been distributed on so wide a popular base. Already somewhat over 40% of American youth are going to college. (In California it is well over 80%.) With mass distribution of books, magazines, music, painting, radio and television programming, with ready access to schools of extraordinary variety, and with increasing ease and lowering cost of travel, America is becoming a knowledge-hungry society. Learning has become the prime occupation for many young adults, and it is now a major avocation for the millions of older adults who attend night schools or follow personal programs of study. In the middle-range future, learning might become the dominant activity for the mass of Americans. In part, this eventuality would follow as a direct consequence of the revolution now abuilding in the various communications technologies—in two-way cable television, video-cassettes, facsimile transmission, electronic access to libraries, and so on.

Knowledge is a rather special type of resource because it has the capacity of effectively infinite expansion, and it is enhanced by being consumed. In future decades when high per capita incomes, high rates of productivity, and high proportions of leisure time combine to permit discretionary use of time and discretionary choice of activities, it seems a safe bet that Americans will devote themselves increasingly to the intellectual endeavors. Knowledge has already become the critical economic resource for industrial and governmental suppliers of goods and services. It is fast becoming the critical resource for consumers as well. If America should become a nation devoted to learning, instead of to the production of goods, the national character and the character

of urbanization would both be likely to differ markedly from those we have known during the industrial era of the past century.

There can be little question that a major generator of change in the coming decades will be the continued expansion of the sciences and of the technologies that follow scientific discovery. Already in the years since World War II, the knowledge-based industries have become the most active within the manufacturing sector of the economy. Developments in electronics have created a vast new capability in information handling, in computation, and in communications. The repercussions are spreading to affect every aspect of the society. Whole new industries have developed. Managerial capacities of governmental and private organizations have been greatly expanded. The information content of the goods and services is constantly growing, as information is substituted for labor and materials as primary resources. The distribution of information is being vastly improved as television, telephone, and the other communications media are tying virtually everyone in the nation into a single communications network. It is likely that we are approaching a major transformation in educational methods, resulting from the application of computers to instructional programs. The long-range consequences of the communications revolution are yet to be uncovered, of course. But one thing seems clear: it is fostering increasing cultural pluralism, and it is triggering an unprecedented national integration that in turn will continue to erode the localism that has characterized human societies throughout history.

The continuing rise in real personal incomes over the coming decades will inevitably mean an ever-expanding rise in average living standards and an ever-increasing opportunity for discretionary spending. If recent consumer behavior can be taken as an indication of future households' choices, we can expect continued expansion of home ownership, including ownership of second houses; greater demand for communications gear, personal transportation, vacation and travel, wider interest in literature and art; and, of course, increased consumption of educational and health services of all sorts. In parallel, those who consume these preferred goods and services will enjoy the culturally enriched life that travel, education, health, communications accessibility, and personal mobility afford; and they will have improved access to the employment opportunities that, in circular fashion, carry higher incomes and greater personal satisfactions.

A corollary of expanding knowledge, of more refined occupational specialization, and of experimentation in the arts is the increasing pluralism of the American publics. The more pieces of information available and the more ideas produced, the more combinations and permutations extractable from the enlarging repertoire; hence, a wider range of possible fashions in thought and styles of life.

High-scale society is distinguished by the diversity of social groups that compose it and by the variety of belief systems, behavioral patterns, living preferences, activity choices, styles of music, clothing, housing, and the rest. Groups held together by common beliefs, interests, and fashions are becoming the primary communities to which people belong, displacing the communities of residence as locus of loyalty and fealty. As the numbers and varieties of these communities have been rising, America is becoming a nation of minorities. Each person nowadays finds himself a member of many groups, each with its peculiar set of beliefs, behavioral norms, and obligations. Each of these groups is a minority within the larger society. Indeed, these many minorities are the modern society.

In preindustrial societies, populations tend to be homogeneous—to share beliefs, to follow similar life paths, and to pursue similar occupational and leisure habits. With industrialization the degrees of freedom were multiplied as the cultural diversity that accompanied urbanization opened opportunities to be different from one's community of birth. Now and later, as those opportunities become further expanded, we can expect a dramatically increasing diversity among the increasing number of subpublics that will be living in American metropolitan areas. Each will surely have its own set of environmental preferences, and, with their increasing capacity to command them, most are likely to be supplied with them as well.

I am suggesting that the popular commentary about the coming "mass society" and about the homogenization of suburbia is largely wrong. It appears that just the opposite is happening. And, if that is so, we shall need to prepare ourselves for a highly diverse array of urban settlement patterns, for a diversity of demands for public services, and for a heterogeneous variety of social communities that these would serve.

The growing scale of the society has been marked by a finer division of labor and hence by expanding interdependencies among specialized groups. As improvements in transportation and communication have eroded the frictions of geographic space, specialized persons and organizations have found it feasible to satisfy their interdependencies by dealing with others located considerable distances away. Networks for interchange of goods, ideas, information, and services have by now become spatially extensive so that individual firms count the entire nation or the entire world as their trading district. Some of these firms have grown to huge size, and, with branches located in many countries, have become truly supranational in character.

Large corporate size is mirrored by large size of other groups—labor unions, trade associations, churches, professional societies, civic clubs, and, of course, large governments. In the most developed nations, the countries whose societal scales are greatest, levels of income and accumulated wealth have been

growing to extraordinary levels. The size of individual investments is growing through time as both public and private investments call for huge commitments of capital. In turn, large investments rely on large organizations, large markets, and large, intricately complex communications networks that connect each organization to the many others laced into the national and international webs.

Ease of interaction over great distances has made it possible and thus imperative that individuals and organizations find their partners to transaction wherever they might be located. Improvements in transportation and communications are already so weakening the constraints of geographic separation that suppliers can be located thousands of miles from their customers, even in low unit value product lines and when steady-flow delivery schedules are required. Such spatial separation is financially feasible because cost differentials for transportation and communication between any two places in the nation are approaching zero. Where transport costs were once powerful determinants of location, they are probably now a rapidly weakening force in many of the new industries, losing their dominance to considerations of comfort, amenity, and prestige, and to communication access.

So interdependent are business firms located on the east and west coasts, so dispersed are members of families, so interwoven are the affairs of local and federal governments that it is no longer possible to deal with any of these as identifiable, unitary, social organizations. Regional economies are being so intricately interwoven into the national economy as to obliterate their local identities. Local politics are merging into the national politics as the national government assumes greater responsibilities for the affairs of the national society and as the distinctions between the old layers of the federal system get increasingly blurred and marbled.

The consequence has been to merge the various organizational sectors of the society into an integrated national society. At best, each organization is but a subsystem within an integrated national system whose components are spatially distributed over the continent but intimately involved in the daily affairs of the whole. Similarly, the interaction paths among the many cities are by now so ubiquitous as to have erased many of the lines that once distinguished one city from another—save unique location, of course. The high volumes of communication among the various cities and metropolitan areas suggest that these now comprise a single urban system across the 3000-mile-wide continent. Allowing for the distance costs that remain and for the vestiges of cultural variances among the regions, it is as though the new societal scale has brought the geographic parts of the United States together into a single city.

A telling mark of the postindustrial economy is the proportionate shift in its inputs from natural resources to informational resources. Information and

intelligence are becoming the major generators of growth and hence are becoming the most coveted properties. New manufactured products and services devour information the way early factories absorbed trainloads of coal and ore. The congealed information compressed into such contemporary products as electronic equipment and into such activities as those of the Council of Economic Advisers or corporate management must be something like several-thousandfold greater than a generation ago. In turn, expectations for ever-expanding demands for information and knowledge are encouraging huge expansions in product lines and in activities that will further enhance information-handling capabilities—improved computers, higher education, research and development, and improved communications systems of varied types.

Unlike the natural resource inputs to prior generations of industry, information inputs are easily transported over geographic distances. Electronic transmission lines comprise one group of means for carrying information, and the technological capabilities here will undoubtedly be greatly expanded in the near future. Another major carrier is the human mind, packaged in a human body. In a mobile society of large scale, these bodies are very easily moved about, too. Those who engage in the information-rich industries thus have a far wider range of locational options opened to them than do the producers of coal or pig iron, say, whose options are constrained by high transport costs. The old constraints that required locations near deep water, along rivers, or adjacent to mineral deposits are weakening for the modern industries. Increasingly the natural endowments that affect locational decisions are pleasant climate, handsome landscape, and recreational opportunities. A clear derivative of the shift to the information-rich occupations of the postindustrial service economy is vastly increased locational freedom.

Cities develop *only* because proximity means lower transportation and communication costs for those interdependent specialists who must interact with each other frequently or intensively. Throughout human history, people have been moving near each other, trying to increase their opportunities for mutually satisfactory transaction. Of course, shortened distances are equivalent to higher densities and are inevitably associated with some considerable costs of congestion, high rent, loss of privacy, and so on. Nonetheless, over all historic time and over all the world's space, there has been a nearly universal movement to villages, towns, cities, and, now, megalopolitan concentrations.

The trend is apparent in the newly developing nations where preindustrial rural folk are now overflowing the cities' capacities. This has long been the classic mark of the Western industrial nations, where measures of industrialization have been interchangeable with measures of city growth. But must this also be true of postindustrial nations? Is it reasonable to expect that, for the first time in history, high-scale societies may develop that are not city based? It

was the demand for ease of communication that first brought men into cities. Could the forthcoming and unprecedented demands for long-distance communication combine with the space-spanning capacities of the new communications technologies to concoct a solvent that could dissolve the city?

The cities we are familiar with in America were largely built in response to the rapid industrialization that followed the Civil War. They were, in effect, adjuncts to the factory, providing houses for workers, railroads for raw materials and finished products, offices for industrial management, and ancillary shops and services to accommodate the city's occupants. The city took the shape dictated by the transportation technologies of the times. Initially they were highly compact, reflecting the limited accessibility afforded by horse-drawn vehicles and street cars and the absence of effective substitutes for face-to-face communications. The overall configuration was concentric, with most factories and commercial establishments near the center and with densities of resident populations declining unimodally to the nearby city edge. That pattern was strikingly similar to the ones that had marked cities of preindustrial times as well, for these, too, had been dependent on pedestrian or slow-vehicle modes for movement, and on direct conversational encounter.

The automobile, the paved road, and the telephone have changed all that. Once auto ownership became widespread, once the road system became an extensive network, and once telephones became commonplace, constraints on location were dramatically reduced. By now, with paved roads leading virtually anywhere that people choose to locate their homes or their workplaces, and with metropolitan populations continuing to rise, cities have been overspilling their traditional boundaries. Cities of the late industrial period, here and throughout the world, are spreading far into the surrounding terrain, as factories, offices, houses, and shops have been located in the more spacious and amenable environments that the automobile has opened in the suburbs and the exurbs. By now the spatial extent of individual settlements can be delineated only by imposing such arbitrary definitions as municipal borders and Census Bureau districts. The real boundaries around the physical cities have already been eroded away. The freestanding settlement of an earlier era is disappearing into spatially extensive settlement held together by a network of roads and communication channels. The settlement pattern of the late industrial, early postindustrial period is clearly the megalopolitan one. This may not persist into the mature postindustrial era, however.

The newfound locational freedom is being taken in two ways. New metropolitan areas are being built at such distant places as Houston, Phoenix, and Denver. In both new and old metropolitan areas, additional developments are being placed at the low-density extensive fringe of prior settlement. The effect is to retain the city as a cluster of populations and buildings in physical space,

albeit in new-style patterns, even as their communication habits engage the inhabitants into the lives of their many nationwide and worldwide communities.

Despite the new ease of interaction over geographic space, metropolitan areas remain the destination of migrants from rural areas and small towns. During the past decade metropolitan areas of between 1 and 2 million inhabitants grew fastest, suggesting that here the agglomeration economies may be most nearly optimal. Costs of ready access to the constellations of business services that modern enterprise requires must now be among the important considerations that enter the locational calculus. Small metropolitan areas seem to be too undersupplied with readily accessible suppliers of specialized informational services. The larger ones may be too encumbered by congestion costs—expressed as high rents, competition for road space, pollution effects, crime, and the array of other ills that have come to mark the large contemporary metropolis.

Cities have always been essentially communications switchboards—the locales where the greatest numbers of connections are joined and where the transactional business of the society is most easily accomplished. Communication has always sustained the social community, molded social organization, and maintained the connections therein. Contemporary urban settlements are archaic in these primal respects.

With similar adherence to old ways, the communications lines that comprise cities follow two major patterns. *One* connects the local to other locals through a broad array of channels—friendship links, family ties, business connections, chance encounters, planned meetings, telephone and mail services, face-to-face conversations, and so on. These media serve the day-to-day, high-frequency routinized interchanges that comprise the highest volume of transaction among persons and corporations. These are the interchanges that support daily family life and the daily, repetitive activities of firms and their employees. The *second* pattern ties these establishments to the rest of the nation and the rest of the world. These interactions tend to be more specialized, more infrequent; nonetheless, they may also be more consequential. In selecting from among the available locations, one must inevitably weigh his anticipated demands for communication channels of both types, then select from among the assortment of available metropolitan areas and intrametropolitan places that location most likely to match his communication habits and transactional requirements.

With the present array of organizations and populations, it is clear that the big, old-fashioned central business districts such as Manhattan and Chicago's Loop remain attractive to many headquarters offices. Affording large numbers of face-to-face contacts with related firms and easy access to multiplicities of

business-support services (lawyers, banks, accountants, hotels, nightclubs, and so on), these concentrated business districts have been continuing to grow, despite suburbanization of employees' residences and of the firms' manufacturing activities. I can guess only that the exponential increase in volumes of information passing through these offices has made their information-sensitive executives wary of being removed from the communications crossroad. As Richard L. Meier once put it, the validity of intelligence received by word-of-mouth in a face-to-face, handtouching encounter can probably be more sensitively appraised than if it arrives on a piece of paper or through a telephone voice.

The continued expansion of Washington, D.C., is the nation's clearest example of the new importance of information in the management of contemporary affairs. Washington remains among the ranks of the nation's fastest growing metropolitan areas, because the expansion of the roles of federal government has made it important for virtually every trade association and other nationally organized interest group to have its representative inside that communications switchboard. Washington is probably the first purely postindustrial city, being almost totally occupied with handling information and in producing services. Its prime raw materials are information and intelligence (in both meanings, i.e., as cognitive abilities and as "hot-poop"); its major products are restructured information and more inside information. (Over 85% of the employed residents within the metropolitan area are engaged in the service occupations. The others are busy putting up new buildings to house the expanding numbers of service workers and in running the transportation and communications systems that, in turn, serve the services. Only 4% are engaged in manufacturing, the lowest in the nation.)

In its occupational structure, Washington may be our preview of the future city. Its spatial structure is very traditional, however, for it has been built around the same transportation, communication, and building technologies that have shaped cities across the continent. But, because it is so thoroughly involved in postindustrial activities, it may supply us with an observation post from which we can monitor the consequences of the new communications technologies as they become manifest. Establishments like the White House, Pentagon, CIA, NASA, and embassies adopt the fanciest and most effective communications equipment that is available as soon as it becomes available. Other Washington groups having less demanding communications requirements may be slower to adopt new systems, but they are not likely to be far behind. To provide fast feedback, someone should establish a new kind of Washington-watch, aimed at supplying early alert on the use and effects of new communications systems.

Virtually all the technological developments of industrial times (and many, such as the sailing ship, the astrolab, and the compass, before) have had the effect of reducing the constraints of geographic space. During this century, the

automobile and the telephone have made possible the suburb and, when combined with the railroad and the airplane, the development of the western reaches of the continent.

Although it would be difficult to demonstrate, it does appear that the patterns of settlement have been more directly influenced by the transportation systems than by communications. If so, it is probably a reflection of the uneven distribution of transport lines and terminals that make some places more accessible than others. International airports exemplify this. In contrast, phone lines have long been virtually ubiquitous. Roadways are only now evening out the accessibilities among all places within any given region of settlement.

The forthcoming developments in communications, however novel and significant, will fit directly onto the historic trend line of the pony express, the telegraph, and the telephone. By supplying better channels for transmitting information and meaning, they will improve the capacities of partners in social intercourse to transact their business at great distances. With the further prospects of holography, a quality of presence may be brought into the transaction of those distant partners that begins to approximate the capabilities of the luncheon table in mid-Manhattan. All impending communications systems will be space eroding in these ways. If combined with the promised transportation system improvements, their effects would be compounded. In either case, the prospectus is clear. Many of the constraints that have limited locators to choices among metropolitan areas and places within them will be greatly relaxed. For the first time in history, it might be possible to locate on a mountain top and to maintain intimate, real-time, and realistic contact with business or other associates. All persons tapped into the global communications net would have ties approximating those used today in a given metropolitan region.

I am guessing that early in the next century, settlement patterns will be spread broadly over the continental surface, localized at those places where the climate and landscape are pleasant. Densities are likely to be at the scale now occurring at the exurban fringes of the eastern metropolitan areas. High incomes will permit most families the household equipment that typifies the exurban upper-income home today, but the household's communications apparatus will surely be more sophisticated and competent than that currently in use at the White House.

It was the desire for improved communications that brought people to the cities at the outset. By getting geographically close to the opportunities concentrated in the city, the migrant was able to better his life chances, to improve his lifetime earnings, to learn a wide variety of skills, and to get connected into the complex social, economic, political, and cognitive networks that comprise urban societies.

It might seem paradoxical or a perversion of these long-term historic trends that the move to high-density settlement should soon be reversed. I think not. It was not a desire for migration per se that induced farmers, peasants, and small towners to move to the big city. The city, with concentrations of people and buildings, held comparatively little attraction to migrants anywhere or at any time. It was the opportunity to get connected up, to become tuned into the culture of urbanized society that was attractive; and the city has always been the place of greatest connectivity, the spot where it was easiest to get hooked up to the affairs of the time.

But if the connections should become nearly as good in more pleasant settings, many will be willing to trade off some of the opportunities offered by high connectivity for the opportunities offered by high amenity. A great many already have, as the moves to the suburbs and exurbs suggest, and as the growth of the Arizona desert demonstrates. It may not take very dramatic improvements at the margin of communication capabilities to trigger a major sector of the commercial, industrial, and residential populations into following them in pursuit of the desert life, too. The postindustrialization of the economy will, after all, make it unnecessary for many to remain at the deep-water ports and railheads that were the initiating causes of their current locations. In the high-scale society that is now emerging, it will increasingly be the ties to the national and global networks that will be determining, and the culture of localism will be likely to decline still further. I am suggesting that the occurrence of the new communications systems coincides in time with some major historic developments that will also work to reduce the functions of the traditional city. In concert, these are likely to be indomitable forces.

As the processes of cultural pluralism work further to differentiate the population into minority groups, there is likely to be another trend counter to the dispersion-inducing ones I have been discussing. We are now struggling with the current manifestations of spatial segregation among groups distinguished by race, ethnicity, national origin, and social class. Most pronounced, of course, is the spatial concentration of lower-class Negroes in the centers of large metropolitan areas. The fast-paced suburbanization of middle-class whites is a direct reaction to the immigration of the blacks, especially to the shifts in school enrollment compositions. At this stage in the nation's development, that trend is still unturned, and virtually everyone now expects an apartheidlike settlement pattern in many metropolitan areas in future years.

It is not only the white-black segregation that occurs, however. Where large numbers of youth associated with the "counterculture" have settled in an area, older residents have found it less comfortable, and some have left. Where ethnic differences have been wide, voluntary segregation has commonly followed. The post-World War II suburbanization has led to the incorporation

of thousands of suburban municipalities, each with its own population group, typically comprising a narrow socialclass spectrum, typically marked by its own peculiar stylistic preferences for housing, schooling, public services, and, above all, neighbors. Suburban municipalities exist to help assure each of the plural groups a life setting it prefers and to help assure the exclusion of groups it does not prefer.

Reinforcement of the dispersion-inducing influences will likely also be a reinforcement of the segregation-inducing ones. In this context, the new communications systems may disserve those at the lower reaches of the income distribution and the lower social strata. Middle-class white folks can now get all the way to Westchester to avoid proximity to Harlem. Later they may be able to move all the way to Phoenix.

The city has always been the destination of rural-deprived families who aspired to greater opportunity. Once they arrived, the city became the equivalent of a school—an institution where one learned urban ways, acquired salable skills, and became acculturated into modern urban society. At the turn of the twentieth century, it was pretty easy to make the leap from preindustrial to industrial status, partly because the requisite skills were not difficult to acquire, and partly because the communication channels were relatively open to newcomers. At the turn of the twenty-first century it might be a great deal harder to accomplish that leap. Salable skills take a lot longer to learn nowadays; extensive schooling is necessary if one is to become adept at the information-handling jobs. Compared to the needle-trades, for example, computer programming, machine servicing, or even cashiering are cognitively difficult occupations. Some of these learning difficulties will undoubtedly yield to improved teaching techniques, and later the gap may not be as wide as it is now. But the spatial gap between lower-class districts and middle-class ones may become too wide and thus too difficult for the typical person to bridge.

The new communications systems would seem to be inducing a major social problem, partially of their own doing. In addition to making it easier to transmit credible intelligence among distant places, in addition to providing hard copy by wire, to opening the library to home-video review, to transmitting three-dimensional images, and the many other promised wonders, means must also be found to assure that these channels are opened to all sectors of the pluralistic population. Can we be assured that the communications media of the next decades will accomplish for the underprivileged youth of the year 2000 what the free public library and the free public school did for the immigrant youth of 1900? Is there an inherent trait of the new technology that assures its widespread availability? Or, like the suburb, is it likely that the very considerable benefits will be distributed to those who are already well off, leaving the less advantaged relatively the worse for the improvement?

In our fascination with the improved efficiencies that will accompany the coming revolution in communications, in our enchantment with the marvels of the new hardware, it would be well that some of our attention be directed to the equity consequences, as well. The distribution of benefits is not likely to fall out directly. No self-governing generator of equity is built into the new electronics. The issues of distributive justice will need to be imposed from outside the hardware system. These, it seems, will be by far the most intractable of the research and development problems accompanying the new communications systems and their consequences for urbanization.