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Transactions of the Institute of British Geographers is currently published by The Royal Geographical Society (with the Institute of British Geographers).
The geography of the United States in the year 2000

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MS received 28 January 1970

(An address delivered at the Annual Conference of the Institute of British Geographers, Belfast, 3 January 1970)

ABSTRACT. There are increasing demands that research in geography should respond to the needs of public policy. It is therefore essential to attempt to monitor geographical change, to identify its essential properties, and to understand the geographies that are most likely to emerge in the future with and without public intervention. This paper analyses the increasing contemporary polarization of the United States into a limited number of growing daily urban systems, expanding through continued innovation and diversification, and the inter-urban peripheries whose economies and populations are declining, except where minority groups such as American Indians have exceptionally high fertility rates.

In determining what is critical to further transformation of the geography of the United States, however, it is concluded that: (a) migration of the minority-group poor from the peripheries to the cores of the central cities, and (b) a resulting acceleration of the outward movement of upper-income white population from central city to the expanding outer edges of the daily urban systems, now 80–160 km away from the city centres, will invert the geography of the country by the year 2000. This tendency to inversion, supported by rising real incomes, improved highways, and the search for superior low-density residential amenities, will be further advanced by new electronic technologies that replace movement of persons by movement of messages, thus reducing and eventually eliminating the traditional role of the CBD in permitting face-to-face contacts. The coming era of telemobility, in which mechanical environments will be replaced by electronic environments, will push the emerging inversion of American geography into its ultimate dispersed forms.

It is a sign of the times that increasing numbers of geographers are to be found advising governments. The country, the agency and the particular problem may differ, but the questions asked are always, fundamentally, the same: What will be the consequences of doing A as opposed to B? What is the best way of achieving X or Y? To what extent are C and D achieving P and Q, and are unexpected or undesirable consequences emerging? To answer presupposes skills to which few among us can justifiably or should willingly admit, the ability to outline alternative future geographies, to monitor geographical change and to measure the degree to which geographical change achieves its goal. What, for example, is the most probable future geography of the United States, or some part of it, at some specific future time, in the absence of public intervention? What are the likely geographies resulting from alternative public programmes? And what is the most desirable future geography, that which most nearly achieves socially-accepted goals?

Our science may not yet be equal to the task, but I submit that, unless we develop the capacity to respond to such questions, we will find our personal alternatives vanishing as governmental support is shifted to those who can demonstrate the skill. For I accept that we are now part of an increasingly universal and post-industrial society characterized by a
trend towards increasingly sensate cultures and meritocratic élites, a society in which change, based upon scientific and technical knowledge, is guided increasingly by the public sector through its financing of research and development. I conclude that if we, as geographers, fail to perform in policy-relevant terms, we will cease to be called on to perform at all.

One of the most pressing public debates in the United States today concerns the development of a national urban growth policy. Therefore, in this paper I propose to describe what I consider to be the more salient features of the geography of the United States in the 1960s, to examine the processes that have given rise to this spatial organization, to explore the innovations producing changes in the processes and transformations in the structure, and to speculate about the probable geography of the nation in the census year 2000.

PAST FORECASTS OF FUTURE GEOGRAPHIES

The first step is to determine what is salient in the geography and in the processes of geographical change in the United States today. I first looked back, albeit unsystematically, to see if there were lessons to be learned from those who, in the past, have been perceptive of the future. I found a variety of examples, such as Robert Vaughan, who in 1843 wrote (pp. 90–91, 100) that ‘cities . . . must soon become . . . the acknowledged wealth and power of nations . . . the new and speedy communications which will soon be completed between all great cities in every nation . . . will necessarily tend to swell the larger towns into still greater magnitude and to diminish the weight of many smaller places as well as of the rural population generally . . . everywhere we trace this disposition to converge upon great points . . . the great tendency of modern society is toward the formation of great cities’.

Almost as an echo comes H. G. Wells’s reflection 60 years later (1902, p. 39): ‘the broad features of the redistribution of the population that . . . characterized the nineteenth century . . . [were] an unusual growth of great cities and a slight tendency to depopulation in the country. The growth of the great cities is the essential phenomenon.’ Clearly, Vaughan had identified the tendencies latent in his day.

Wells’s own predictions are still my favourites, however, for I suppose that the tasks I have identified call for fictional insight and analytical skill. We might dwell upon his Anticipations concerning the probable diffusion of great cities in some detail, because Wells was right in the changes he forecast, but he saw them as coming by the end of the twentieth century, failing to estimate the accelerating pace of change. What he described was not the geography of the United States in 2000, as he thought, but that of 1960. On the other hand, like Vaughan, he attached the greatest significance in his forecasts to those factors compressing time and space, and I suggest that it is for this reason that both he and Vaughan were correct.

In 1902 Wells advanced the proposition ‘that many of [the] railway-begotten “giant cities” [of 1900 would] reach their maximum in the coming century [and] in all probability they . . . are destined to such a process of dissection and diffusion as to amount almost to obliteration, so far, at least, as the blot on the map goes, within a measurable further space of years’ (pp. 45–6). ‘These coming cities will not be, in the old sense, cities at all; they will present a new and entirely different phase of human distribution’ (p. 47). ‘The social history of the middle and later thirds of the nineteenth century . . . all over the civilized world is the history of a gigantic rush of population into the magic radius of—for most
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people—four miles, to suffer there physical and moral disaster less acute, but, finally, far more appalling than any famine or pestilence that ever swept the world ... But ... these great cities are no permanent maelstroms. New forces, at present so potently centrifugal in their influence, bring with them, nevertheless, the distinct promise of a centrifugal application that may finally be equal to the complete reduction of all our present congestions. The limit of the pre-railway city was the limit of the man and horse. But already that limit has been exceeded, and each day brings us nearer to the time when it will be thrust outward in every direction with an effect of enormous relief.

"So far the only additions to the foot and horse ... are the suburban railways.... The star-shaped contour of the modern great city, thrusting out ... knotted arms of which every knot marks a station, testify ... to the relief of pressure thus afforded. Great towns before this century presented rounded contours and grew as puff-ball swells; the modern Great City looks like something that has burst an intolerable envelope and splashed ... the mere first rough expedient of far more convenient and rapid developments' (pp. 50–51).

"We are ... in the early phase of a great development of centrifugal possibilities.... A city of pedestrians is inexorably limited by a radius of about four miles ... a horse-using city may grow out to seven or eight.... Is it too much ... to expect that the available area for even the common daily toilers of the great city of year 2000 ... will have a radius of over one hundred miles?' (pp. 51–2).

"What will be the forces acting upon the prosperous household ... ? The passion for nature ... the allied charm of cultivation ... [and] that craving ... for a little private imperium [are] the chief centrifugal inducements' (pp. 54–6). "The only reason why they should get out to a residence here rather than there is the necessity of saving time, and such a violent upward gradient of fares as will quite out-balance the downward gradient of ground values" (p. 61). "The general nature of the expansion of the great cities in the future ... [therefore] will not be a regular diffusion ... but a process of throwing out the "homes" and of segregating various types of people. The omens seem to point pretty unmistakably to a wide and quite unprecedented diversity in the various suburban ... districts" (p. 62).

"The city will diffuse itself until it has taken up considerable areas and many of the characteristics of what is now country.... The country will take itself many of the qualities of the city. The old antithesis will ... cease, the boundary lines will altogether disappear.... To receive the daily paper a few hours late ... will be the extreme measure of rusticity save in a few remote islands and inaccessible places' (pp. 70–71). ""Town" and "city" will be, in truth, terms as obsolete as "mail coach"... We may call ... these coming town provinces "urban regions"' (p. 67).

Urban Regions and Inter-Urban Peripheries of the United States in 1960

Achieved at a pace more rapid than he anticipated, Wells's forecasts captured the essential features of the geography of the United States in 1960. 'City' and the continuously built-up 'urbanized area' had already been superseded in the realities of daily life by larger urban regions—commuting areas or, as C. A. Doxiadis (1969) calls them, 'daily urban systems'.

The daily urban system of Chicago, to look at one example, had a radius of up to 160 km in 1960 (Fig. 1). The dominant commuting flow was still to and from more highly concentrated and centralized workplaces, so that the intensity of long-distance commuting
declined with distance from the central city (as revealed in the inset graph on Figure 1, which plots every census tract in the daily urban system). But the local diversity was very great and the distance-decay has been decreasing progressively, typical of a highly differen-
tiated social geography and a rapidly decentralizing industry (Berry and F. Horton, 1970). Moreover, a substantial zone of the central city showed an exceptionally low degree of participation in the labour market. This zone was the reception area for migrants from rural poverty areas.

In 1960, all but 5 per cent of the nation’s population lived within such daily urban systems, which sprawled like amoebae over the landscape (Fig. 2). If one calls the zones beyond the daily urban systems the ‘inter-urban periphery’, and then traces out combinations of commuter-sheds and boundaries between television viewing areas, to add a further fundamental element of daily interaction, a fairly distinct regionalization of the country emerges (Fig. 3). For the purist who likes an exclusive and exhaustive regionalization, addition of the wholesale trade relationships of the daily urban systems permits a complete disaggregation of the conterminous United States into 171 economic areas, each relatively self-sufficient in the tertiary sector (Fig. 4).

Within each region, regular gradients of metropolitan influence can be traced, revealing that identical rhythms characterize a broad range of social and economic phenomena (Fig. 5). As the degree of commuting declines, so do median incomes, but the proportion of the population below the poverty line increases. The peripheral zones of poverty are the zones of emigration to the city centres, helping to explain the pockets of poverty accumulating there, and both city centre and inter-urban periphery are, in general, zones of population decline.

Juxtaposing the commuting areas of the nation’s seventy-odd truly metropolitan centres and the rest of the country, we therefore find that:

1. Most parts of the nation lying outside these areas are experiencing population decline (Fig. 6).
2. This is largely because of migration out of the inter-urban peripheries (Fig. 7) into the major metropolitan areas (Figs 8 and 9).
3. The only exceptions are certain peripheral areas of high fertility, associated with particular minority groups (Fig. 10).
4. The result is two kinds of periphery, that with a declining, elderly white population, and that occupied by minority groups in which natural increase is able to feed emigration and still maintain a youthful population (Fig. 11).
5. All minority groups are now affected. Whereas a decade ago the American Indian was still restricted to the reservations to which he had been forced by Federal directive (Fig. 12), in the last decade he has urbanized apace (Fig. 13; E. Neils, 1969).

**EMERGENCE OF THE PATTERN**

Most American scholars today agree that the broad processes of national development that have, together, resulted in this geography of the United States as it appeared in 1960 have been urban-centred from the start. To be sure, ‘... throughout the evolution ... two factors, great migrations and major changes in technology, have particularly influenced the location of relative growth and decline. ... Major changes in technology have resulted in critically important changes in the evaluation or definition of particular resources on which the growth of certain urban regions had previously been based. Great migrations have sought to exploit resources—-ranging from climate or coal to water to zinc—that were newly appreciated or newly accessible within the national market. Usually ... the new
FIGURE 2. Commuting fields of all major central cities in the United States.
FIGURE 3. Daily urban systems of the United States
FIGURE 4. Functional economic areas maximizing closure in the residential sector.
The United States in the year 2000

1. Bangor, Maine
2. Portland, Maine
5. Hartford, Conn.
6. Albany–Schenectady–Troy, N.Y.
7. Syracuse, N.Y.
8. Rochester, N.Y.
9. Buffalo, N.Y.
14. New York, N.Y.
15. Philadelphia, Pa.–N.J.
17. Baltimore, Md.
23. Raleigh, N.C.
24. Wilmington, N.C.
26. Charlotte, N.C.
27. Asheville, N.C.
28. Greenville, S.C.
29. Columbia, S.C.
30. Florence, S.C.
31. Charleston, S.C.
32. Augusta, Ga.
33. Savannah, Ga.
34. Jacksonville, Fla.
35. Orlando, Fla.
36. Miami, Fla.
37. Tampa–St. Petersburg, Fla.
38. Tallahassee, Fla.
39. Pensacola, Fla.
40. Montgomery, Ala.
42. Macon, Ga.
43. Columbus, Ga.–Ala.
44. Atlanta, Ga.
45. Birmingham, Ala.
46. Memphis, Tenn.–Ark.
47. Huntsville, Ala.
49. Nashville, Tenn.
50. Knoxville, Tenn.
51. Bristol, Va.–Tenn.
52. Huntington–Ashland, W.Va.–Ky.–Ohio
53. Lexington, Ky.
54. Louisville, Ky.–Ind.
55. Evansville, Ind.
56. Terre Haute, Ind.
57. Springfield, Ill.
58. Champaign–Urbana, Ill.
60. Indianapolis, Ind.
61. Muncie, Ind.
62. Cincinnati, Ohio–Ky.–Ind.
63. Dayton, Ohio
64. Columbus, Ohio
67. Youngstown–Warren, Ohio
68. Cleveland, Ohio
69. Lima, Ohio
70. Toledo, Ohio
71. Detroit, Mich.
74. Lansing, Mich.
75. Fort Wayne, Ind.
76. South Bend, Ind.
77. Chicago, Ill.
78. Peoria, Ill.
80. Cedar Rapids, Iowa
81. Dubuque, Iowa
82. Rockford, Ill.
83. Madison, Wis.
84. Milwaukee, Wis.
85. Green Bay, Wis.
86. Wausau, Wis.
87. Duluth–Superior, Minn.–Wis.
88. Eau Claire, Wis.
89. La Crosse, Wis.
90. Rochester, Minn.
91. Minneapolis–St. Paul, Minn.
92. Grand Forks, N.D.
93. Minot, N.D.
94. Great Falls, Mont.
95. Billings, Mont.
96. Bismarck, N.D.
97. Fargo–Moorhead, N.D.–Minn.
98. Aberdeen, S.D.
99. Sioux Falls, S.D.
100. Rapid City, S.D.
101. Scotts Bluff, Nebr.
103. Sioux City, Iowa–Nebr.
104. Fort Dodge, Iowa
105. Waterloo, Iowa
106. Des Moines, Iowa
107. Omaha, Nebr.–Iowa
108. Lincoln, Nebr.
110. Wichita, Kans.
111. Kansas City, Mo.–Kans.
112. Columbia, Mo.
113. Quincy, Ill.
114. St. Louis, Mo.–Ill.
115. Paducah, Ky.
116. Springfield, Mo.
117. Little Rock–North Little Rock, Ark.
118. Fort Smith, Ark.–Okla.
119. Tulsa, Okla.
120. Oklahoma City, Okla.
121. Wichita Falls, Tex.
122. Amarillo, Tex.
123. Lubbock, Tex.
124. Odessa, Tex.
125. Abilene, Tex.
126. San Angelo, Tex.
127. Dallas, Tex.
128. Waco, Tex.
129. Austin, Tex.
130. Tyler, Tex.
131. Texarkana, Tex.–Ark.
132. Shreveport, La.
133. Monroe, La.
134. Greenville, Miss.
135. Jackson, Miss.
136. Meridian, Miss.
137. Mobile, Ala.
139. Lake Charles, La.
141. Houston, Tex.
142. San Antonio, Tex.
143. Corpus Christi, Tex.
144. Brownsville–Harlingen–San Benito, Tex.
146. Albuquerque, N.M.
147. Pueblo, Col.
148. Denver, Col.
149. Grand Junction, Col.
150. Cheyenne, Wyo.
151. Salt Lake City, Utah
152. Idaho Falls, Idaho
153. Butte, Mont.
154. Spokane, Wash.
156. Yakima, Wash.
158. Eugene, Ore.
159. Boise City, Idaho
160. Reno, Nev.
161. Las Vegas, Nev.
162. Phoenix, Ariz.
163. Tucson, Ariz.
164. San Diego, Calif.
165. Los Angeles–Long Beach, Calif.
166. Fresno, Calif.
167. Stockton, Calif.
168. Sacramento, Calif.
169. Redding, Calif.
170. Eureka, Calif.
171. San Francisco–Oakland, Calif.
172. Anchorage, Alaska
173. Honolulu, Hawaii
Figure 5: Gradients of urban influence
appreciation or accessibility has come about, in turn, through some major technological innovation' (J. R. Borchert, 1967, p. 324).

However, each of the successive sets of 'natural resources that count' has had an urban-centred definition. In the agricultural period, the natural endowment most valued was arable land with environmental components of climate and water. During industrialization, a new set of mineral resources became important. In the twentieth century, service activities and amenity resources have exerted an increasingly strong pull on industry and on people. But in each of these stages, urban growth and regional development have been closely interdependent.

North America's oldest cities were mercantile outposts of a resource area whose exploitation was organized by the developing metropolitan system of western Europe. The initial impulses for independent urban growth came at the end of the eighteenth century, when towns were becoming the outlets for capital accumulated in commercial agriculture and the centres of colonial development of the continental interior. Regional economies developed a certain archetype: a good deep-water port as the nucleus of an agricultural hinterland well adapted for the production of a staple commodity in demand on the world market. Growth potentials of regions depended on the extent and richness of the hinterlands accessible to the ports. The prototype of the American metropolis thus was a port at a strategic location on long-distance oceanic or riverine trade routes, providing a range of mercantile services, and determining the terms of trade. The growth of this agricultural
resource-dominated (but city-centred) expansion of the economy set the stage for subsequent developments by establishing a geography of markets, transport routes and labour forces that conditioned the nature of succeeding growth.

New resources became important from 1840–50 onward, and new locational forces came into play. Foremost was a growing demand for iron, and later steel, and along with it rapid elaboration of productive technologies. Juxtaposition of coal, iron ore and markets
FIGURE 8. Migration fields of the fourteen largest S.M.S.A.s, 1955–60

FIGURE 9. Principal destinations of migrants from selected poverty regions, 1955–60. S.M.S.A.s for this and the next three Figures are as defined on Figure 8.
FIGURE 10. Areas of high fertility in 1960, classified by race

FIGURE 11. Areas of youthful and elderly population in 1960
afforded the impetus for manufacturing growth in the north-eastern United States, localized both by factors in the physical environment (minerals) and by environmental components created by prior growth of the urban system (linkages to succeeding stages of production, in turn located closer to markets). The 'heartland' of the North American manufacturing belt developed westward from New York in the area bounded by Lake Superior iron ores, the Pennsylvanian coalfields, and the capital, entrepreneurial experience and engineering trades of the north-east, while at the same time New York cemented its dominance by accentuation of its financial, entrepreneurial and specialized manufacturing roles (Fig. 14). This heartland became not only the heavy industrial centre of the country, but has remained the centre of national demand, determining patterns of market accessibility ever since (Fig. 15).

The heartland had initial advantages of both excellent agricultural resources and a key location in the minerals economy. With development, it grew into the urbanized centre of the national market. Subsequent metropolitan growth was in a pattern organized around this national core region until the last decade. From 1869 to the mid-1950s, there had been a stable pattern of growth in manufacturing employment among the states (G. H. Borts, 1967). Continued spread of population and agriculture over the continent pulled processing and servicing activities and new urban growth with them. However, the dominant effects in terms of development still came from growth of the minerals economy until well into the twentieth century, so that a process of 'circular and cumulative causation' (A. Pred, 1966) strengthened and maintained the relations of the national heartland and hinterlands—of
core and periphery—and the new metropolitan centres that did emerge did so in sequence with the overall growth, outward spread, and spatial integration of the economy.

In each case, the basic conditions of regional growth were set by the heartland. It was the lever for successive development of newer peripheral regions by reaching out to them as its input requirements expanded, and it thereby fostered specialization of regional roles in the national economy. The heartland experienced cumulative urban-industrial specialization, while each of the hinterlands found its comparative advantage based on narrow and intensive specialization in a few resource sub-sectors, only diversifying when the extent of specialization enabled the hinterland region to pass through that threshold scale of market necessary to support profitable local enterprise. Flows of raw materials inward, and of finished products outward, articulated the whole (E. Ullman, 1957).

It is little wonder that, in his masterful analysis of regional growth in the United States through the 1950s, H. S. Perloff (1966) concluded that the central driving force is '... a great heartland nucleation of industry and the national market, the focus of large-scale national-serving industry, the seedbed of new industry responding to the dynamic structure of national final demand and the center of high levels of per capita income...' and that, standing in a dependent relationship to the heartland, '... radiating out across the national landscape are... resource-dominant regional hinterlands specializing in the production of resource and intermediate outputs for which the heartland reaches out to satisfy the input requirements of its great manufacturing plants. Here in the hinterlands, re-
source-endowment is a critical determinant of the particular cumulative advantage of the region and hence its growth potential.'

From this situation, of course, we derive our conventional current theory of urban and regional growth, which states that each region is an integral part of a larger interdependent economy, and so long as demand and supply conditions change and regions have differing advantages for production, differences in regional growth must be seen in larger systemic terms. Basic to the growth of given regions, according to the theory, is their capacity for attracting industries that produce goods for export to other regions, so that the nature of regional specialities and changes in the structure of demand for them determine in large measure the nature and extent of regional growth. In turn, the level of export activity determines the level of local market provision of goods and services for 'residential' demands.

Throughout, of course, the theory points out how important it is to remember the role of the metropolitan centres. It is they that organize the space-economy. They are the centres of activity and of innovation, focal points of the transport and communications networks, locations of superior accessibility at which firms can most easily reap scale economies and at which industrial complexes can obtain the economies of localization and urbanization. It is they, therefore, that encourage labour specialization, areal specialization in productive activities, and efficiency in the provision of services. Metropolitan centres, standing at the top of the nation's urban hierarchy and at the centre of each of its regions, are therefore the nodes whose connections integrate the national economy. Continuing
agricultural enterprise is more efficient in the vicinity of cities. The more prosperous commercialized agricultures encircle the major cities, whereas the peripheries of the great urban regions are characterized by backward lower-income economic systems.

The theory, derived as it is from studying the last century’s economic history, goes on to say that, like regions, cities have similar national bases for their growth. The polarization of growth in cities, particularly larger metropolitan areas, is a reflection of trends in the national space economy. Differential growth rates among cities are a function of competitive advantages in location, accessibility and local economic mix. The characteristic structure of a system of cities at any point in time reflects past growth performance and provides the basic infrastructure for future growth.

But all of a sudden our urban economists have started to sing another tune. For example, W. Thompson (1968) has pointed out that, today, the long-run viability of a metropolitan area resides not so much in regional resources, traditionally viewed, but on its own capacity to invent and innovate, or otherwise acquire new resources and export bases. To follow his argument, he says that the economic base of the larger metropolis is the creativity of its universities and research parks, the sophistication of its engineering firms and financial institutions, the persuasiveness of its public relations and advertising agencies, the flexibility of its transport networks and utility systems, and all the dimensions of ‘infra-structure’ that facilitate the quick and orderly transfer from old dying bases to new growing ones. Larger urban areas, he argues, combine a favourable mix of industry for growth with a steadily declining share of the various growth industries. High wage rates of the innovating area, quite consonant with the high skills needed at the beginning of the learning process, become excessive when skill requirements decline, and the industry (or parts of it) will then ‘filter down’ to smaller, less industrially sophisticated areas where the cheaper labour can meet the declining demands for skills of the filtering industry, thus creating the phenomenon of small towns with ‘low-wage, slow-growth filtered-down industry’ at the time when the metropolis has moved on to new bases. This capacity of the large metropolis to invent new economic bases means that large urban regions have freed themselves of narrow export dependency, traditionally defined. Further, the larger the metropolis, the freer it is from traditional restraints. At a sufficiently large scale, infrastructure and residiency development make the growth of the large metropolitan complex essentially self-generative, with a tendency to grow at or about the rate of the nation (Thompson, ibid.). Figure 16 shows this convergence in the growth rates of the 171 daily urban systems with increasing size in the decade 1950–60.

This trend in the urban system has been accentuated since 1950 by the growth of the service sector, an increase in the number of ‘footloose’ industries (including final processing of consumer goods using manufactured parts, and the aircraft, aerospace and defence industries), rapid emergence of a ‘quaternary’ sector of the economy (involving, for example, the research and development industry), the expansion and inter-regional migration of the non-job-oriented population (for example, of retired people to Florida, Arizona and
California), and the overall rises in real incomes. These factors have all served, additionally, to produce yet another transformation of the economy and the urban system based upon new amenity resources (Perloff, 1960). Advantages for economic growth have been found around the western and southern ‘outer rim’ of the country, in regions and places relatively well-endowed with such amenities, and in the outer rim of each urban field, as changing technology of communications has reduced the time and costs involved in previous heartland-hinterland relationships and in communications between the centre and periphery of each field.

The advantages for the outlying regions have been cumulative, for regional growth within the context of the national pattern of heartland and hinterland had brought these regions to threshold sizes for internal production of a wide variety of goods and services at the very time that changes in the definition of urban resources made possible a rapid advance based upon superior factor endowments of the periphery; the combination pushed them beyond the threshold for self-sustaining growth. Hence the explosive metropolitan development in the south, south-west and west since 1950, and the equally explosive realignments within urban fields surrounding the older metropolises elsewhere in the nation.

Now there are various ways in which one can interpret the result. I like the one proposed by J. Friedmann and J. Miller (1965), who say that it is possible today ‘...to interpret the spatial structure of the United States in ways that will emphasize a pattern consisting of one, metropolitan areas and two, the inter-metropolitan periphery. Except for thinly populated parts of the American interior, the inter-metropolitan periphery includes all the areas that intervene among metropolitan regions and that are, as it were, the reverse image of the trend towards large scale concentrated settlement that has persisted in this country for over half a century. Like a devil’s mirror, much of the periphery has developed a socio-economic profile that perversely reflects the very opposite of metropolitan virility’. This was the geography of the United States as we presented it in 1960.

**CONTRASTING VIEWS OF THE FUTURE**

Friedmann and Miller rightly go on to point out that the periphery has a disproportionately large share of low growth and declining industries and a correspondingly antiquated economic structure—an area in long-term and continuous decline, with selective emigration that has polarized the remaining population around the very young and the very old. The quality of public services has deteriorated, the housing stock is older, and educational attainment is significantly below that for metropolitan America. ‘Rapid and selective outmigration, a declining economic base, the burden of an ageing population, and low incomes have rendered many peripheral communities helpless in their desire to adapt to changing circumstances in the outside world. The remaining population is frequently short both on civic leadership and hope. They can neither grasp the scope of the events that have overtaken them nor are they capable of responding creatively to the new situations’ (Friedmann and Miller, ibid.).

In trying to diagnose the reasons for the pattern, Friedmann and Miller say ‘The emergence in large sections of the country of the inter-metropolitan periphery as a major problem area has been the direct result of the concentration of people and activities around closely contiguous metropolitan cores. Growth in and around these cores has drawn off the productive population, economic activities, and investment capital of the periphery.’

On the other hand, they say ‘Looking ahead to the next generation, we foresee a new
scale of urban living that will extend far beyond existing metropolitan cores and penetrate deeply into the periphery. Relations of dominance and dependency will be transcended. The older established centers, together with the intermetropolitan peripheries that envelop them, will constitute the new ecological unit of America’s post-industrial society that will replace traditional concepts of the city and metropolis. This basic element of the emerging spatial order we shall call the \textit{urban field}.

‘The urban field may be viewed as an enlargement of the space for urban living that extends far beyond the boundaries of existing metropolitan areas—defined primarily in terms of commuting to a central city of “metropolitan” size into the open landscape of the periphery. This change to a larger scale of urban life is already under way, encouraged by changes in technology, economics, and preferred social behaviour’.

Spelling out their idea further, ‘... an urban field is based on the criterion of interdependency. It represents a fusion of metropolitan spaces and nonmetropolitan peripheral spaces centered upon core areas of at least 300,000 people and extending outwards from these core areas for a distance equivalent to two hours’ driving over modern throughway systems (approximately 100 miles with present technology). This represents not only an approximate geographic limit for commuting to a job, but also the limit of intensive weekend and seasonal use (by ground transportation) of the present periphery for recreation’ (Friedmann and Miller, ibid.).

But this is a conservative forecast indeed, for all that the authors are saying is that what exists will be, only in slightly greater degree. By 1960, the effect of American growth had already been to lay down on the country a system of spatial organization and resource evaluation based on a network of metropolitan centres essentially self-generating in growth and therefore transcending the older national order of heartland and hinterlands, with radiating effects of metropolitan influence decaying from core to periphery within each urban field.

That distance-decay should continue to lessen is hardly surprising and, as it does, it should undoubtedly lead Friedmann and Miller’s network of urban fields in the direction of H. Kahn and A. Wiener’s propositions (1967) that ‘the United States of the year 2000 will see at least three gargantuan metropolises, Boswash, Chipitts, and Sansan, which should contain more than half the U.S. population, including an overwhelming proportion of the most technologically and scientifically advanced, the most prosperous and creative elements of society’. Kahn and Wiener continue that, while all three will be recognizably American in culture, each will most likely have a quite distinguishable sub-culture—the continuing cosmopolitanism of Boswash; the combination of Bible belt and Carl Sandburg’s ‘raw and lusty vitality’, in Chipitts; and the ‘wholesome degeneracy’ of the informal ‘barbecue’ culture of Sansan. Involving the emergence of post-industrial society, study of the United States in the year 2000, Kahn and Wiener conclude, may largely be of Boswash, Chipitts and Sansan. They are supported by projections such as those of J. P. Pickard (1967), based on continuation of present trends, and those of the Office of Business Economics using similar methods. Both forecast a population in excess of 60 million in both the Atlantic Seaboard and Great Lakes urban regions by 2000, and another 40 million or so in California.

\textbf{GROWTH PROCESSES AND AN ALTERNATIVE VIEW}

These forecasts are conservative. They err where H. G. Wells erred—in underestimating the pace of change. They miss what J. J. Servan-Schreiber (1969) has called the essence of ‘The
American challenge', the compression of time and space in a way that was inconceivable even 10 years ago, with attendant intensification of human experience alongside lessening demands for movement because of centralized information sources and instantaneous communication. Servan-Schreiber points out that the time-lag between invention and manufacture was 112 years for photography (1727–1839), 56 years for the telephone (1820–76), 35 years for radio (1867–1902), 15 years for radar (1925–40), 12 years for television (1922–34), 5 years for the transistor (1948–53) and 3 years for the integrated circuit (1958–61). I agree with Servan-Schreiber that this convergence is the most salient characteristic of American life today. We are on the verge of yet another fundamental transformation of American society, one destined, I anticipate, to *invert* the spatial patterns of 1960 by the year 2000.

To understand the logic of this anticipation, we must first understand the nature of the growth processes currently operating in the country. There are two major elements in the city-centred organization of economic activities in space that are important:

(a) *A system of cities*, arranged in a *hierarchy* according to the functions performed by each

(b) Corresponding *areas of urban influence* surrounding each of the cities in the system.

We know the following about this system of spatial organization:

(a) The size and functions of a central city, the size of its urban field, and the spatial extent of developmental 'spread effects' radiating outward from it are proportional.

(b) Impulses of economic change are transmitted in order from higher to lower centres in the urban hierarchy, in a 'size-ratchet' sequence, so that continued innovation in large cities remains critical for extension of growth over the complete economic system.

(c) The spatial incidence of economic growth is a function of distance from the central city. Troughs of economic backwardness lie in the most inaccessible areas along the peripheries between the least accessible lower-level centres in the hierarchy.

(d) The growth potential of an area situated along an axis between two cities is a function of the intensity of interaction between them.

One would conclude from this that, if metropolitan development is sustained at high levels, differences between centre and periphery should be eliminated and the space-economy should be integrated by outward flows of growth impulses through the urban hierarchy, and the inward migration of labour to cities. Troughs of economic backwardness at the intermetropolitan periphery should, thereby, be eroded, and each area should find itself within the influence fields of a variety of urban centres of a variety of sizes. Continued
urban-industrial expansion in major central cities should lead to catalytic impacts on surrounding regions. Growth impulses and economic advancement should 'trickle down' to smaller places and ultimately infuse dynamism into even the most tradition-bound peripheries.

The recent diffusion of television illustrates these themes perfectly (Berry, 1979). Television stations were installed by cities in the familiar S-shaped logistic time sequence, although affected by two periods of war (Fig. 17). The diffusion pattern of stations among cities was essentially hierarchical. Large cities installed stations before smaller cities (Fig. 18). The proportion of households purchasing television sets depended upon the hierarchical diffusion of broadcasting stations, but the spatial incidence of purchases was also a function of distance from broadcasting cities (Fig. 19). As diffusion proceeded apace, market penetration neared completion first along the nation's principal growth axes and extended wavelike into the periphery (Fig. 20). Continuing, total geographical coverage was achieved by 1958 (Fig. 21), and low degrees of market penetration thereafter remained only in the nation's troughs of economic backwardness (Figs. 22 and 23).

The subtlety of television as an innovation is important, however, and this is why I chose it as an example of the traditional diffusion process. It arose as an 'evolutionary' innovation, one which is a logical extension of existing trends in the society and economy,
FIGURE 19. Market penetration by TV in 1953. Percentage figures on this and the next four Figures represent the percentage of households with TV.

FIGURE 20. Market penetration by TV in 1956
and was adopted accordingly, both hierarchically and spatially, just as any other small adjustment or new technology has been in the United States. Yet it has had a revolutionary impact already, not simply because of its hypnotic domination of leisure time, but because of the universality and immediacy of experience that it brings into each household. The entirely new conditions thus created are not being countered by further incremental changes in the existing system, I submit, but by the emergence of entirely new social frameworks. Television, I think, is the first of a series of revolutionary electronic innovations that will affect America in the years to come.
The conditions are favourable. Rising real incomes, shortening working weeks, and increased leisure time all set the stage. So does the fact that most urban fields have now passed the minimum scale necessary for self-sustained growth either in simple economic terms or by use of political influence in Washington to guarantee continuing stability until they reach the size threshold—all of which means that the 'lever' effect of heartland growth upon hinterlands specializing in resource sub-sectors has vanished, or will soon do so, and along with it, alas, our traditional theories of urban and regional growth.

And now, as a result of reporting by the medium, we have the universal perception of decaying central cities, the new home of the former residents of the now-emptied periphery; the immediate on-the-spot experience of their riots; the careful documentation of their frustrations; and acute awareness of emerging separatist feelings. It is no accident that the suburbanization of white city dwellers has increased from the 450 000 net outflow annually of the 1950–60 decade to over 800 000 a year today.

All of this presages an inversion of American geography by the year 2000, an inversion already indicated in the contrasting pattern of acceptance of colour television in the years 1966–68 (Figs. 24, 25, 26). I foresee the legal central cities assuming a new reality as the bases within which the nation’s poor minorities can gain and exert political power and influence. I also foresee that gradients of distance-accretion will replace those of distance-decay. Persons of greater wealth and leisure will find homes and work among the more remote environments of hills, water and forest, while most will aspire to this as an ideal. This, of course, is another inversion; the environments historically least valued are rapidly becoming those most desired. The signs are already there to be noted. As I wrote this paper, for example, I read of I. W. Abel, president of the United Steelworkers, calling for a four-day working week and a three-day weekend. And again, in Time magazine for 26 September 1969 about Windham County in south-eastern Vermont, a traditional Yankee area of woods, farms, and small towns, which is now being subdivided for second vacation
FIGURE 24. Market penetration by colour TV in 1966. Percentage figures on this and the next two Figures represent the percentage of TV households with colour TV.

FIGURE 25. Market penetration by colour TV in 1967
homes—there will be more than 10,000 in only three or four years. And, following the vacation homes, will surely be the permanent residences and the industries.

I do not pretend for one minute that the name of the game is simply 'scatteration'. The essence of the change is that we are moving into an era of telemobility, and from mechanical into electronic environments. Our present geography and our geographical concepts are mechanical—distance-decay, gravity model, heartland–hinterland. To be sure, existing electronic technologies, if used in conventional ways, can so reduce the frictions of space and the delays of time that the traditional processes moulding today's geography will take on their limiting forms. But this again is the conservative, evolutionary view. The revolutionary aspect of electronic environments is not that they reduce the frictions in moving goods and people, but that they move the experience itself to the human nervous system. Traditionally, we have moved the body to the experience; increasingly we will move the experience to the body, and the body can therefore be located where it finds the non-electronic experiences most satisfying. Consider what is implied:

'Let us imagine a particular space and time c. 1986: a home in the suburbs of Phoenix. A man is sitting in the middle of a circular room and on the curved walls around him he can see the ocean-surf breaking over the rocks and foaming up the beach; a fish hawk trembling in the luminescent sky. Across from him sits another man, and the two of them are talking to each other. Once in awhile, the boom of the bursting surf and the cry of the hawk intrude upon their conversation.

'Let us now say that the room is underground and has no "real" view at all; that what is experienced on the curved walls is an image on a "flat wall" television screen, pre-recorded in Hawaii, and now being replayed electronically. Let us further say that the first man is "real", but that the second man is being broadcast by laser beam from a satellite and recreated, in color and full dimension (you could walk around his image and see the back of his head) by "holography", so that though he is "there" in Phoenix at the moment, he is "in reality" at the same moment sitting in his study at the University of Edinburgh.
‘Where, in this situation, does “reality” begin and end? This will be a question that—by 1986—we will, individually, be asked to answer. There is nothing in the situation just described that does not appear to be perfectly feasible within perhaps the next ten years; certainly within the next twenty. We have already entered a new world of experience.’

What then of the current surge of growth of hotel space, meeting rooms and industrial plants around our major regional airports? What of corporation headquarters, of daily tides of commuters, of expressways and mass transit systems, if communication is substituted for movement? What if the geography of face-to-face contacts, of physical movement, of skyscrapers is replaced by a thin film of electrons spread over the countryside? Where then, did Boswash, Chipitts and Sansan go? Is this the most probable future? Is it the most desirable?

It is, I suppose, a failing that we share with all our species that we become wedded to comfortable ideas and retain them long after they have ceased to be relevant. So it is with current geographies of the United States, and even with views of its future. To be sure, images of past geographies peep through, palimpsest-style, as they will in the future, for Kenneth Boulding properly emphasizes that growth creates form, but that form then limits growth. But bold new patterns and forces lead us to re-fashion the picture we paint of the present, and the story we tell of the future. The signs are there for the discerning observer to see. The problem is to fit them into a pattern, to determine the process, to work out the logical consequences, and to outline the alternatives for achieving a different future if we do not like what we foresee, for as Daniel Bell argues so cogently (personal commn) ‘perhaps the most important social change of our time is the emergence of a process of direct and deliberate contrivance of change itself. Men now seek to anticipate change, measure the course of its direction, and even shape it for predetermined ends’. And therein, I suspect, lies the future of geography as a profession, of the objects that it studies, and of its conceptual foundations.

NOTES

1. The television viewing areas used are the Designated Market Areas of the A. C. Nielsen Company (1967–68), defined such that each D.M.A. contains:
   (i) The central metropolitan area for which at least one station achieves the largest quarter-hour audience share 9.00 a.m.–12.00 midnight.
   (ii) All additional counties that have their largest quarter-hour audience share with all the D.M.A. stations in total. Counties are allocated exclusively to a particular D.M.A., and the definition is revised each year. Smaller single-station markets within larger D.M.A.s are not distinguished and, in the county allocations, boosters, C.A.T.V., satellites and translators are taken into account.
2. Starting with Figure 2, these were defined by the Regional Economics Division of the Office of Business Economics, U.S. Department of Commerce, as follows:
   (i) Economic centres were identified. Usually, these were S.M.S.A.s but, where several S.M.S.A.s are parts of larger integrated economic complexes, they were combined. In rural parts of the country, centres of 25 000–30 000 were used, provided they were wholesale trade centres.
   (ii) Counties were allocated to centres first on the basis of commuting flows, and for the periphery on the basis of other ties—television viewing, wholesale trade, etc.
   (iii) Very small economic areas were combined if they comprised larger television or wholesale markets, to satisfy a minimum size criterion of 200 000.

The intent was to define areas that ‘approach closure with respect to residientiary industries, and therefore self sufficiency in the tertiary sector, while specializing in export activities to other areas’ (U.S. Department of Commerce, 1967).
3. I am indebted to Calvin L. Beale for letting me draw on his maps in preparing Figures 8–11.
4. This quotation comes from a brochure of the Kaiser Company circulated several years ago called ‘Telemobility—when far is near’.
REFERENCES


BORTS, G. H. (1967) Patterns of regional economic development in the United States (Report to the National Advisory Commission on Rural Poverty, U.S. Department of Agriculture)


FRIEDMANN, J. (1966) Regional development policy (Cambridge, Mass.)


KUHN, T. S. (1962) The structure of scientific revolutions (Chicago)


NIELSEN, A. C. Co. (1968) Designated market areas (New York, A. C. Nielsen Co.)

PERLOFF, H. S. (1960) Regions, resources and economic growth (Baltimore)


THOMPSON, W. (1968) ‘Internal and external factors in the development of urban economies’ in H. S. PERLOFF and L. WINGO (eds) Issues in urban economics (Baltimore)

ULLMAN, E. (1957) American commodity flows (Seattle)


VAUGHAN, R. (1843) The age of great cities (London)

WELLS, H. G. (1902) Anticipations of the reaction of mechanical and scientific progress upon human life and thought (New York)

RéSUMÉ. La géographie des États-Unis en l’an 2000. Il y a des demandes croissantes que la recherche géographique réponde aux besoins de programmes publiques. C’est donc très nécessaire d’essayer à contrôler des changements géographiques actuels, afin d’identifier leurs propriétés essentielles et de comprendre les manifestations qui en émergeront avec ou sans l’intervention officielle. Cet essai analyse la polarisation contemporaine croissante des États-Unis en un nombre limité de systèmes urbains-journaliers grandissants, se développant aux moyens d’innovations et de diversifications, et de périphéries inter-urbaines avec des économies et des populations en baisse excepté là où des groupes minoritaires, tels que les Indiens d’Amérique, ont des taux de fertilité exceptionnels.

Cependant, en déterminant ce qui est important à la transformation future de la géographie des États-Unis il est convenu que (a) la migration du groupe minoritaire des économiquement faibles de la périphérie au cœur des villes centrales, ayant pour résultat (b) une accélération du mouvement vers l’extérieur de la population blanche aux revenus supérieurs, de la ville centrale aux limites mouvantes des systèmes urbains-journaliers, actuellement éloignées de 80–160 km des centres de villes—transformeront la géographie du pays vers l’an 2000. Cette tendance à l’inversion supportée par des revenus nets à la hausse, des auto-routes améliorées et la recherche de commodités supérieures associées aux districts résidentiels à faible densité, sera accentuée par les nouvelles technologies électroniques qui remplacent le mouvement de personnes par le mouvement de messages, réduisant ainsi et éliminant éventuellement le rôle traditionnel du CBD en permettant le tete-à-tete nécessaire pour les principales décisions à prendre. L’approche de la télémobilité par laquelle le milieu mécanique sera remplacé par le milieu électronique, poussera l’inversion naissante de la géographie des États-Unis dans ses formes les plus dispersées.

FIG. 1. Rayon de déplacement de Chicago
FIG. 2. Rayons de déplacement de toutes les principales villes aux États-Unis
FIG. 3. Systèmes urbains-journaliers des États-Unis
FIG. 4. Étendues économiques fonctionnelles avec clôture maximum dans le secteur résidentiel
FIG. 5. Degrés de l’influence urbaine
FIG. 6. Zones de populations en baisse aux États-Unis, 1950–60
FIG. 7. Régions avec des taux de fortes émigrations en Appalachia, 1960–64
FIG. 9. Principales destinations d’émigrants venant de régions pauvres sélectionnées, 1955–60
FIG. 10. Régions de grande fertilité en 1960, classées par race
FIG. 11. Régions de populations jeunes et de populations d’un certain âge en 1960

Um festzulegen, was entscheidend für die weitere Umwandlung der räumlichen Verhältnisse der Vereinigten Staaten ist, genügen die beiden folgenden Feststellungen: (a) die Abwanderung der älteren Minderheiten aus interstädtischen Peripherien zu Großstadtzentren, sowie (b) eine entsprechende beschleunigte Abwanderung weisser Oberschichten aus dem inneren Stadtgebiet zu den wachsenden Randgebieten des Stadtgebietverkehrs, z.Z. 80–160 km von der Stadtmitte entfernt. Ebengenannte Vorgänge werden die Geographie der Nation bis zum Jahre 2000 vollständig verändern. Diese Verkehrstendenz, durch steigendes Realeinkommen, verbesserte Strassen, sowie dem Verlangen nach erhabener, zerstreut liegender Wohnkultur unterstützt, wird durch die sich entwickelnde elektronische Technik besonders gefördert werden. Letztere wird persönliche Zusammenkunft durch Nachrichtenaustausch ersetzen und damit die Verringerung des ‚central business district' verringern und schliesslich aufheben. Die zukünftige Ära der Telemobilität, in welcher die mechanische Umwelt durch die elektronische ersetzt wird, wird sich die zukünftige Umwandlung der amerikanischen räumlichen Ordnung zu ihrer verstreuten Endform durchsetzen.

ABB. 1. Das Stadtgebiet von Chicago
ABB. 2. Stadtgebiete der nordamerikanischen Großstädte
ABB. 3. Tägliche Stadtzugsgebiete der Vereinigten Staaten
ABB. 4. Verhältnismässig geschlossene Wirtschaftsgebiete
ABB. 5. Zonen des städtischen Einflussbereichs
ABB. 10. Gebiete mit besonders starkem Nachwuchs, 1960, nach Rassen
ABB. 11. Gebiete junger und alter Bevölkerung, 1960
ABB. 12. Hauptreservierungen für Indianer
ABB. 13. Verteilung der Indianer nach County, 1960
ABB. 14. Gebiete die 1962 stark von der industriellen Produktion abhängig waren
ABB. 15. Zugang zum Nationalmarkt gemessen am Bevölkerungspotential im Jahre 1960
ABB. 17. S-Kurve der Anzahl von Städten mit Fernsehsender, 1940–68
ABB. 18. Hierarchische Ausbreitung des Fernsehnetzes
ABB. 19. Verteilung der Fernsehapparate, 1953
ABB. 20. Verteilung der Fernsehapparate, 1956
The United States in the year 2000

ABB. 21. Verteilung der Fernsehapparate, 1959
ABB. 22. Verteilung der Fernsehapparate, 1962
ABB. 23. Verteilung der Fernsehapparate, 1965
ABB. 24. Verteilung der Farbfernsehapparate, 1966
ABB. 25. Verteilung der Farbfernsehapparate, 1967