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INTERNATIONAL URBAN SYSTEMS

Any audience like this, coming to any symposium in this place and with this purpose, would be able to intuit at least half the content of the presentations in advance. Since all of you know Lloyd, and all of you have worked with him and have been influenced by him, you guessed, even before you saw the program, that we are all going to talk about global urbanization. And now you know that we are all going to orate about structural transformations in latter-day capitalism, about the replacement of Fordism by flexible specialization, about the shift to the informational mode of production, about the globalization of the economy, about command and control centers, and all the rest of the litany. Well, so we shall. But I think that an afternoon to honor Lloyd should do more than that. We don't want to spend three hours telling us what we all know, and he knows a thousand times over. So let me start from a different place.

The Importance of the Historical Inheritance

Let me start, in fact, from the geographical bedrock. The post-Marxist urbanists now keep telling us that we need to understand the significance of place. And when we try to do that, we discover the elementary but profound truth that the urban world is infinitely varied. If we restrict our attention only to the advanced industrial economies, we find three entirely different urban systems that profoundly reflect the forces of history.

Europe

Two of these systems, in fact, are the product not of centuries but of millennia of evolution. In Europe, as the historical geographers of an earlier generation used to remind us, many of the leading cities are Roman foundations. They reflect the decisions of Roman governors and military men two thousand years ago, who drove their highways across the continent and established cities at key nodal points. London, Paris, Lyon, Cologne, Frankfurt, Barcelona, Rome itself, were all products of those decisions. More than a thousand years later, in the high Middle Ages, Europe was politically fragmented but economically integrated. The trade routes followed the old Roman lines, though others were added in the parts of northern Europe where the Roman writ had never run: most importantly, the great east-west trade corridor along the border where the central uplands meet the northern plain. Along this line, another great series of cities grew up: places like Dortmund, Hannover, Brunswick, Magdeburg, Wroclaw, Krakow. And, in this period, the great east-west sea route of the Mediterranean was paralleled by another, colonized by the Hanseatic merchants, in the North and Baltic seas. Paralleling Barcelona and Marseilles and Genoa and Naples, there was a new line of great port cities of the north: Bruges, Hamburg, Copenhagen, Lübeck, Rostock, Szczecin, Gdansk, Kaliningrad.

Later came the industrial and trade revolutions of the nineteenth century. In Europe they happened to coincide, almost uncannily, with the great era of nationalist uprising between 1830 and 1871. Because the industrial revolution came to mainland Europe nearly a century later than to its British birthplace, it depended far more from the beginning on the railroad systems. These systems focussed on the political capitals. In some countries, which had achieved early national unity--above all Britain and France--they focussed on a single capital city. In others, that were still in the throes of nation-

building--Germany, Italy--there is a more complex pattern, where the national focus is replicated by other networks focussing on strong provincial capitals. And in the twentieth century, when railroads were complemented and even supplanted by highways and air corridors, these uncannily reflected the railroad geography of a century before.

Why am I discoursing on ancient history? Because in Europe, it is impossible to understand the current forces of urban change without it. Two years away from 1992, the year of the Single European Market, what we find is still a series of distinct urban hierarchies that reflect these two millennia of evolution. Britain and France still have their dominant national capitals, which are now each the centers of giant metropolitan regions: a heavily primate urban hierarchy, as the geographers call it. Spain and Italy and Germany still have their flatter urban hierarchies which reflect the long and tortuous history of national unification.

The most poignant and the most obvious symbol of this history, in this year 1990, is Berlin. Berlin was no Roman foundation. It has no obvious nodality. It was the creation of the Prussian kings, who created their barracks capital in a desolate region long known as the sandbox of Germany. Totally eccentric to the Germany of 1990, its position reflects the fact that the original power base originated far to the east, in what is now Poland and even the USSR. But this upstart East European state forcibly unified the smaller kingdoms and principalities of the west, and after the historic union with Bavaria, for seventy years Berlin came into its own as the capital city of Europe's most prosperous and most powerful state. It was the center of government, banking, education, culture: it was even the high-tech capital of the world, the Silicon Valley of its day.

Then, in 1945, all was stilled. The Russian tanks reached Berlin first, the city was carved into four zones of occupation, the high-tech industries were dismantled and carried away, the German economy got rebuilt two hundred miles to the west. After construction of the wall in 1961, the most telling symbol of the city's plight was not the most famous one, the Brandenburg Gate, but a little-known area around the Anhalt train station. This had been the main entrance to the city from western Europe. Behind it lay the giant government buildings along the Wilhelmstrasse, the symbol of German power. For forty years the station has lain derelict, now rebuilt as a memorial. The offices have remained, but they have been in East Berlin, the graffiti-daubed wall in between.

Now the wall is coming down, and all the predictions are for reunification by the end of the year. There is going to be one of the greatest removal contracts in history. The government is going to come back from Bonn, the banks are going to come back from Frankfurt, and much of the city's rich media and cultural life are going to come back from Munich and Hamburg and Düsseldorf and all the other cities to which they migrated after the war. It does not bode well for the economies of those cities. I suspect that there is going to be a huge surplus of office space there and a developer's paradise in Berlin.

There is going to be more even than that, though. The rebirth of Berlin, and to a much more limited extent that of Vienna, is going to change the whole map of urban Europe. For these cities are going to fill a vacuum that has existed in central Europe since 1945; they are going, once again, to fill their natural roles as exchange points between east and west. Already they are talking of a new airport to serve both west and east Berlin. They are planning a high-speed train--a pet scheme of Mikhail Gorbachev, by the way--running west to Cologne and Brussels, east to Warsaw and perhaps to Moscow. Berlin, as the

nodal point of central Europe and the capital of the greatest economic power in Europe west of the Soviet Union, will represent a huge new urban presence on the very periphery of the European Economic Community, the Europe of the twelve--though not peripheral to the Europe of the fifteen or the eighteen or whatever it may become.

There is a strange historical irony in this: the resurgence of nationalism in Europe, just at the time when post-nationalism seemed to be on the agenda. The national capitals will come back into their own, but where does that leave the Single European Market? Only a year ago, the best expert bet would have been that the struggle would be between London, Paris, Brussels, and Frankfurt for the title of number-one global city of Europe. Now there is a new contender, potentially more powerful than any of them.

Here we enter the realm of political speculation. The most obvious scenario is that the rest of Europe reacts to the rise of Germany by trying to incorporate the new state fully into the Single Market, at the same time working even harder to create a political and economic counterweight in western Europe: most likely, in Brussels, the center of the irregular polygon whose corners are London, Paris, Milan, Frankfurt, Berlin, Copenhagen, and Amsterdam. But there is no doubt that with the rebirth of Berlin, the economic and political center of gravity will shift powerfully eastward.

The Japanese Urban System

The Japanese urban system is also old, albeit not so ancient as the European. A critical difference is that it developed within a unified nation state, albeit one long split by feudal rivalries. In this state, the accidents of physical geography decreed that the economic core would always be the fertile and densely-populated Tokaido corridor between Tokyo and Osaka. At the

opposite ends of this corridor developed the rival cities, Kyoto--later Osaka itself--and Edo-Tokyo. Especially after the transfer of the capital functions back to Edo in the seventeenth century, dense traffic developed along the road between the two. After the Meiji revolution, Osaka usurped the economic influence, acting as Japan's window on the west. After World War II, the increasing concentration of economic power in the big corporations favored Tokyo, making of it a center of every kind of activity, almost unrivalled in any other country. Significantly, Japan has no real equivalent of Silicon Valley or Route 128: a disproportionate part of the high-technology industry on which the country has flourished is located in the Tokyo suburbs, right next door to the center of control. The much-vaunted Technopolis program, which aims to spread innovative industry in pockets around the country, has so far produced no certain evidence that it can succeed.

Still, the successor to that old royal road is the line of the original Tokaido Shinkansen between Tokyo, Nagoya, and Osaka. It serves one of the most densely populated urban corridors in the world. This extraordinarily linear character of the Japanese urban system does have parallels in other parts of the world: in the American east coast urban corridor, in the Los Angeles-San Francisco corridor, in the so-called Megalopolis England that stretches from London up to Lancashire and Yorkshire, and in the Rhine Valley corridor from Rotterdam to Basel. But nowhere else has it in this extraordinarily concentrated form.

It brings an extraordinary bundle of benefits and costs. On the plus side is the economy in infrastructure that a linear system permits. At peak hours, a Shinkansen train of fourteen cars runs every eight minutes in both directions along the 300-mile line between Tokyo and Osaka; they are well advanced on plans for its successor, the 300 m.p.h. linear motor car that will

cut journey times to one hour. On the debit side, there are the almost unbelievable congestion and escalating land values, especially around Tokyo, that are the everyday concern of the Japanese. Not only do they represent a major social and political problem, denying to the Japanese the quality of life that their economic success should bring; through their impact on financial speculation, they threaten the economic stability of the country and of the global economy.

The American Urban Hierarchy

We could contrast what seems, at first sight, a much simpler story. Against the two-thousand-year history of urban Europe, America counts a mere 370 years. For most of those years, including the most formative, it has been a single economy and polity, its urban system free to grow and change without any of the artificial constraints of political frontiers, nationalist sentiments, or the fortunes of war. Yet in practice, as everyone here knows, it has been more complex than that.

In the first place, just as in Europe and everywhere else, what happens at the start powerfully conditions everything that happens subsequently. The original thirteen colonies originally grew up along the eastern seaboard in a typically colonial economic relationship with the mother country: they looked across the Atlantic rather than at each other. The result was what geographers have long distinguished as a classic colonial pattern of urbanization, with dominant port cities serving as the foci of local river-borne trade, which grew into governmental and financial centers also. That 150-year history, and the subsequent significance of the nineteenth-century Atlantic trading economy, was sufficient to give a long head start to Boston, New York, Philadelphia, and Baltimore and a host of smaller places. Naturally, as the new republic

developed its own internal trading relationships, they at first focussed on the seaboard itself and then on the land corridor behind it.

Then came the opening up of the interior, and with it the great break-of-bulk river and lake ports which served the critical function of entrepôts to a new continent. As my colleague James E. Vance has so perceptively noticed, this function made them the natural points of innovation and hence of economic growth, producing in America a pattern of urbanization quite different from the traditional European central place system: the great cities of this era-- Cincinnati, Detroit, Chicago, St Louis, Minneapolis--grew up at the fringe of the urbanized world, the eucomene. And a similar function was performed by the West Coast ports which later became termini of the transcontinental railroad system. The result is that the United States has at least two different urban hierarchies, one representing the colonial beginnings, the other the rapid development of a continental economy. And since the latter stage involved the spread of an agrarian economy based on few people, much land, and great machines, the cities each had enormous spheres of influence, far larger than their European counterparts could wield in densely-settled peasant economies. While the top cities in Christaller's classic study of southern Germany-- Frankfurt, Mannheim, Stuttgart, Munich, Nuremberg--are a mere 100 miles or less apart, their American counterparts are separated by gaps seven, eight, ten times that distance.

The American urban system thus stands at almost the opposite pole to the Japanese. Largely unconstrained either by physical obstacles or by political barriers, the great regional cities were free to grow and spread. Land was at first cheap everywhere, and everyone wanted more of it. Right from the start, entrepreneurial innovation opened up new land for development. It is interesting, though we should not draw any massive generalization from it, that on three

critical occasions America borrowed German innovations in transportation, and--so to speak--democratized them: in the 1880s, Sprague took Siemens' electric trolley technology and used it to open up streetcar suburbs; in the 1910s, with the Model T, Ford appropriated the invention of Daimler and Benz to take the world lead in mass automobile ownership; in the 1950s and 1960s, Eisenhower borrowed the German Autobahnen and created the Interstate highway system, completing and massively extending the suburban revolution that the trolley car had wrought.

Rail was the transportation technology that first tied together this far-flung urban system, but air was the system which finally allowed it to function efficiently, destroying the old tyrannies of distance. This indeed was the native American transportation innovation, owing little to any other nation; one could almost argue that until it arrived commercially--beginning tentatively in the late 1930s, but effectively only in the 1950s and 1960s--the system had not fully evolved. The key nodes in the American urban system are the giant hub airports which serve the needs of the information-exchange economy: places like Chicago, Dallas, Denver, St Louis, Minneapolis. Some Americans are sometimes tempted into the heresy of wondering why their country cannot function more like Europe. The answer is that there is no comparison: the whole system is geographically too huge. High-speed trains, running at 300 miles and hour and more, represent the future means of inter-city travel in Europe and in Japan too: in the United States, they can never serve more than a fraction of the demand.

The Global Forces

So the systems of cities are really very different. Try as we may, we cannot really lay a common template on them. They are different on at least

two dimensions. One concerns density: the European and the Japanese systems are very dense, with major cities competing with each other over very short intervening distances--to such a degree, indeed, that they invade each others' commute fields; the American system, the east coast apart, remains essentially a continental system on a huge scale, with correspondingly loose structure, in which the leading cities command huge territories. The other concerns political and economic unity: the American and Japanese systems are alike in constituting a single national hierarchy, while the European system still consists essentially of a confusing mixture of national hierarchies, some reflecting present conditions, some those of a pre-nationalist past. That is a very long history lesson, but--so I would argue--a very important one. Without it, we are unlikely to be able to understand fully the impact of the changes that are currently occurring to cities worldwide.

These changes are so familiar to everyone in this audience that I almost hesitate to list them. But it is important to stress that some of them, at least, are really epochal.

The Shift to the Informational Economy

The first can variously be termed the tertiarization of the economy, or the shift to the information economy, or the transition to the informational mode of production. These are not just different versions of the same phenomenon: they present different interpretations of it.

At one extreme, one can argue, as Colin Clark did as long ago as 1940, that there has been a very-long-term trend in advanced industrial economies for the proportion of workers in manufacturing occupations and industries to fall, and for that in service industries and occupations to rise. This results in large measure from the fact that productivity gains have been achieved in

actual production processes, while more and more workers have been needed in processes ancillary to production, such as planning, finance, and marketing. Some observers, such as Stephen Cohen and John Zysman here in America and Jonathan Gershuny in Britain, argue from this that there has been no real change in the economy at all, and that if one reworks the figures according to a proper accounting matrix, we shall find that indeed "Manufacturing Matters."

But in his new book, The Informational City, Manuel Castells introduces a far more radical hypothesis. Apparently casting off entirely the Marxist framework of analysis, he argues that what we are witnessing is the second great economic transformation of modern times. The first was the transition not from feudalism to capitalism, but more fundamentally the change from an agrarian to an industrial mode of production. Similarly, we are now seeing a transition from that to an informational mode, in which the fundamental inputs are no longer material, but knowledge-based. The new informational mode is not the product of new technologies, nor are the technologies a mechanical response to the demands of the new organizational system. Rather, it is the convergence between these two processes that changes the technical relationships of production, giving rise to a new mode of development. Specifically, Castells asserts: "Modes of development evolve according to their own logic; they do not respond mechanically to the demands of modes of production or of other instances of society." And: "The development of productive forces by the liberation of information flows does not require that capitalism be superseded."

What he does say--and here he is on more familiar ground, shared with other authors--is that information technology has powerfully shaped the three major changes in the capitalist economy in the 1980s: an increasing surplus from production (rate of profit), a change in the mode of state intervention away from political legitimation and social redistribution, and toward politi-

cal domination and capital accumulation, and accelerated internationalization. And it has profound consequences for the rise and fall of cities and regions: there is a "new industrial space," characterized by a sharp spatial division of labor, the generation of information in innovative milieux, the decentralization of different production functions, and extreme flexibility in location.

Here, Castells is drawing on a great body of empirical material with which many of you will be familiar. So the picture he paints is a familiar one too. At the core of the system are the great global command and control centers, remote and apparently outside anyone's control. They locate in a few world cities, which increasingly relate more to each other than to the rest of the world: London, New York, Tokyo. These sit in the centers of vast and spreading metropolitan regions, within which more routine informational functions are constantly banished to more peripheral low-cost suburban locations. Even more routine functions, like service delivery and information distribution and retrieval, can be standardized and spread across the entire national and international space, driven by the new information technologies. These technologies thus permit the spread of control of the leading centers, and cement their power.

The Significance of the Innovative Milieu

The world cities thus constitute one critical set of places in the new global system. But another set consists of the innovative milieux, a concept Castells borrows from the late Philippe Aynaud. These, the Silicon Valleys and the science cities, are the innovative power-houses of the new economy, the sources of its inherent dynamism: they command a complex chain of interdependencies and, if anything, they become more exclusive, more secluded, and more central in the process. And very often, of course, the innovative milieux are

found in the world cities; since in the new economic system knowledge is power, there is a tendency for its increasing agglomeration in a very few places.

Places therefore matter, but they can be manipulated. Castells concludes that the restructuring process has had the fundamental goal of "The supersession of places by a network of information flows," outside territorially-based power altogether. Cities and regions compete aggressively, but have less and less power over their fate. The entire process is outside social control: "people live in places, power rules through flows."

Here, I think, Castells is being too deterministic and too pessimistic. As I have tried to argue, we are still a long way from the completely globalized economy. It is abundantly evident that we are moving strongly in that direction, but the shift to the informational mode of production consists not of a single set of processes driven by global capital, but by a much more varied and complex set of forces. And nation states and national urban places still do matter in the overall scheme of things.

In the first place, a significant feature of the shift has been a long-term rise in the proportion of people working in the public sector and in the quasi-public or nonprofit sector, in government, educational, and health services. It is true that right-wing governments in the 1980s have made a determined effort to reverse this trend, but the available evidence suggests that they have been singularly unsuccessful. These people are by no means centralized in a few global centers: on the contrary, they tend to be dispersed in regional cities, state capitols or county seats, and campus towns.

They help account for the features noted in Stanback and Noyelle's important studies of American urban change in the 1970s and early 1980s: most notably the fact that, contrary to popular view, the real international giants like New York, Chicago, Los Angeles, and San Francisco did less well than second-rung

regional centers like Boston, Atlanta, Minneapolis, Houston, Denver, or Seattle. True, that conclusion may have been biased by data for 1970-80, a decade when New York was in severe travail while places like Houston and Denver boomed; the 1980s may look very different. But they also note that some of the highest growth rates of all were recorded by smaller specialized metros dependent on government, education, defense, or some combination of these. Again, the record of the 1980s may be different. But I would beg leave to doubt.

In the European urban system, the new work by Paul Cheshire and Dennis Hay similarly concludes that some of the best performers are either second-rank provincial capitals in the bigger countries--places like Bristol or Toulouse or Florence or Stuttgart--or smaller national capitals like Brussels, Amsterdam, or Copenhagen. Some such cities--Bristol, Nancy, Norwich, and Strasbourg--are growing; others--Amsterdam, Bologna, Copenhagen, Frankfurt, and Hamburg--are examples of what they call "healthy decline," metros that are very prosperous though contracting. But there is an exception to that: older industrial and port cities that served as provincial capitals for old industrial regions, like Glasgow or Liverpool or Dortmund, did not do well at all. That conforms to Noyelle and Stanback's conclusion: the places that did worst in the American urban system were the specialized manufacturing and manufacturing-headquarters cities, like Cleveland or Buffalo or Pittsburgh or Detroit. Though the evidence is just emerging, it now seems clear that even in Japan, some such cities are now performing relatively poorly as their basic industries decline.

Decentralization and Recentralization

Below these medium-sized metros, Europe has over one hundred smaller places with less than a quarter of a million people, many of them administrative centers for rural areas, or resort and retirement towns. Cheshire and Hay

show that nearly three-quarters of them gained people in the 1970s; more than two in five had gains of 5 per cent or more. The fastest-growing metros, whether small or medium-sized, tend to be semi-rural but not remote: they are often close to the biggest metros, which are losing people and jobs. There is thus a process of recentralization of jobs in these smaller places, with local concentrations of residential populations in relatively small and compact commute fields around them.

South East England is an excellent example of these processes. Over a period of nearly three decades, London has been losing both population and employment. A ring of about twenty metros around it has showed big gains. The wave of growth has progressively spread, to engulf places 80 and 100 miles from London. They are all medium-sized towns in rural counties. Research clearly indicates that people move first, in search of affordable housing; then, after a time lag, the local economy expands to employ more and more of them. The same story could be replicated around Paris, Frankfurt, Milan, and a number of other places.

Part of this can be explained by the Castells schema: firms decentralize their more routine operations to the fringes of the global metropolises, in search of lower-cost labor and lower rents. But not all can be explained this way: South East England also includes innovative milieux, like the so-called M4 Corridor west of London, or the Cambridge area, which constitute independent sources of growth. And the origins of these milieux prove very complex and elusive: while the M4 corridor seems to have resulted from long-distance relocation out of London coupled with defense contracting, the so-called Cambridge phenomenon was an indigenous spinoff from university research that somewhat resembles its transatlantic cousin.

Elsewhere, we can see similar processes, but they differ subtly according to national history and national style. The French are attempting to create a Silicon Valley some thirty miles south-west of Paris, by deliberately concentrating there some major industrial laboratories and a technical university; but the results so far do not seem encouraging, and the Paris region has not shown major deconcentration beyond the ring of the planned new towns. The Japanese attempt to create a new science city at Tsukuba, 70 miles north of Tokyo, similarly seems so far to have been a conspicuous failure. Indeed, all the evidence so far seems to indicate that the genesis of innovative milieux is a highly elusive process, not readily subject to deliberate planning.

Part of the explanation, at least, lies in previous history. South East England had a rich research tradition around its two older universities and a number of old-established national scientific laboratories; both Paris and Tokyo tried to implant these traditions artificially. Again, South East England had an exceptionally well-developed structure of prosperous county towns with a good physical and educational infrastructure and a long tradition of informational services, which greatly aided the deconcentration process; the urban system in the corresponding ring outside Paris was more skeletal. What seems to prove true is that the urban system of any nation represents an extremely complex and subtle process of historical accretion, which in turn conditions the nature and speed of subsequent transformation.

More than that: different national governments will react very differently to what they perceive as opportunities for intervention: there is a whole world of difference between the activism of the French and the Japanese, and the laissez-faire approach of the Americans and the British. No global scheme will adequately represent it, though it can hope to represent some of the constellation of forces that are operating.

Pointers to the Future

Against that background, are there any pointers to the future? Will the balance of forces remain similar to that of the past, or is there likely to be some radical disjuncture? Let me end with a few speculations.

The first is that the globalization of the capitalist economy is likely if anything to accelerate in the 1990s. The transformation of Eastern Europe represents one of the most extraordinary economic opportunities in the history of the system. Most of these countries have long industrial traditions, including a specialization in high-technology knowledge-based industries. But they have fallen steadily behind in their transition to the informational mode of production--which indeed, viewed in the broadest historical sense, may have constituted the gigantic Marxian contradiction that brought their regimes down. Since, however, they possess a reasonable physical infrastructure and a rather better educational one, their prospects for rapid transformation appear good. But their transition to a market-based economy comes at precisely the time when the forces to internationalization have been running most strongly. Because they are relatively backward in the use of information, the virtual certainty is that they will be rapidly colonized by international capital. The contradiction between those forces, and the national spirit of self-determination which has helped shape the revolutionary transformation, should pose a fascinating saga. The most likely early outcome will be a reinforcement of the role of the national capitals. Later, there will be an accelerated growth of regional capitals like Berlin or Vienna.

The Role of Technological Change

There are likely to be two major technological developments in the 1990s, which should impact in different ways on the globalization of the economy. The

first is the convergence of computing and telecommunications into an integrated user-friendly system offering a great variety of informational services from a variety of standardized entry-points. These will include the development of multimedia systems combining computer and advanced television services, and the increasing use of electronic notebooks linked to a variety of personalized telephone systems. Theoretically, such a system would permit the almost infinite dispersion of informational activities across nations and continents, including the spread of homework and telecommuting. Practically, all the empirical evidence so far points to the opposite: technical advance will be most rapid in the existing centers of informational exchange, above all the world cities, where demand produces a response in the form of rapid innovation and high-level service competition; conversely, peripheral regions will remain locked into a vicious circle of low demand and low innovation. So the most likely outcome is further development of the Castells schema: an exceptionally high level of concentrated control from the global centers and the innovative milieux, core-to-ring dispersion within these leading regions, and a limited degree of longer-distance decentralization to new regional centers, especially in fast-developing regions of the world.

The other development, already touched on in the European context, is the spread of high-speed train systems. The pioneers here were the Japanese, with the original Tokaido Shinkansen of 1964; but during the 1980s the Europeans, especially the French, have taken a leading role. It seems virtually certain that the 1990s will see completion of at least a skeletal European network linking the national capitals and leading provincial cities, and taking much of the present air traffic up to a critical limit of about 500 miles, as has already been observed on the first TGV line from Paris to Lyon. Meanwhile the Japanese are working on their alternative linear technology, which unlike the

European system demands a completely new dedicated infrastructure. The outcome of the competition will clearly depend on a host of factors including speed, cost, the capacity of the existing system for upgrading, and the degree of existing congestion. At present the first is highly uncertain. The latest TGV technology has achieved 300 mph on test and 188 mph in regular service; indications are that it might eventually run at up to 240 mph. The Japanese plan to operate their linear motor car at 300 mph, perhaps more. Because conditions are so different, it seems likely that the Japanese technology will be used there but not in Europe. The critical unknown is whether the United States--so far virgin territory for the new train technologies--will buy either or both. These systems will boost the fortunes of the cities they serve, particularly those that gain early connection. Both the Shinkansen and the TGV seem to have aided their terminal cities (Tokyo/Osaka, Paris/Lyon) while weakening intermediate cities (Nagoya). The general likelihood is that the trains will disproportionately assist the major centers, particularly those that permit direct and easy transfers with air for long-distance trips. Several European cities, led by Paris, are actively working on such links. So the new rail technologies will aid the fortunes of the global metropolises, while perhaps further aiding the development of subcenters at accessible points within their regions, as has already occurred at Reading 40 miles west of London and Omiya 20 miles north-west of Tokyo, which are the first stopping-points on their respective high-speed train lines.

Overall, therefore, the new technologies are likely to promote concentration at the top of the urban hierarchy rather than the reverse. But the exact mode of their operation will depend, as previously throughout urban history, on the fortunes which shape that hierarchy.

