An interview with Jean Gottmann on urban geography

"... one lesson is of general and lasting portent: that is, the white-collar revolution driving the modern city towards a 'quaternary age.' The basic transformation of society under way will recast urban life to befit new needs which are difficult to imagine. Our thinking about cities is far too conditioned by the difficulties of the evolution and the illusion of a paradise lost in the time of our fathers that would have been ideal for our children. An ancient philosopher said that Megalopolis was the 'city of ideas that determines the material city we really build.' In practice we know that material forms and processes inherited from the past restrict our thinking. This is in interplay between the spirit and the material world with which we have to live, but we can live better with it once we accept the evidence of change and the imperative need to use the power of imagination."

Miloš Perović

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• **Perović:** Studying an incredible concentration of people and activities along the eastern seaboard of the United States composed of large and growing metropolitan areas, suburbs and satellite towns, you reintroduced the term Megalopolis, coined by the Arcadians founding a new city state and lost already in antiquity, giving to it new meaning and importance as the "cradle of a new order in the organization of inhabited space." How has the modern Megalopolis grown up? What is its dynamics of urbanization?

• **Gottmann:** Your question raises several points. May I begin by outlining the process of growth that brought about the modern American Megalopolis which I studied in the late 1950s along the northeastern seaboard of the United States, that is from Greater Boston to Greater Washington, with New York City at its center. When the first European explorers gave the first description of it, in the 16th century, this area was only sparsely settled by rather primitive Indian tribes. European settlement started in a permanent way in the 17th century, and from its beginning it took on an urban shape. The British and Dutch settlers who came there were financed by English or Dutch companies, and required to send back industrial goods that could be produced in that part of the New World. Thus, the purpose of settlement was from the origin industry and commerce, meaning urban form and seaport activity. In the 17th century, although some rural settlement with agricultural pursuits developed steadily along the seaboard and the main river valleys, the major nuclei concentrated a large part of the population of European origin in seatrading towns, located at good harbor sites.

From this foothold on the edge of the wilderness a large migration developed, which generated the transcontinental march of the American nation to the Pacific coast. True, there were also early English settlements south of the Potomac River. The southern settlements seemed to have attracted a somewhat different type of Englishmen; they established a few seaport cities but developed less industry, preferred a plantation type of scattered settlement, growing such staples as tobacco and cotton for export, and using Negro slaves to till the land. From the very start there was considerable contrast in the density and economic base of settlement between the two parts of the seaboard, north and south of the Potomac. It is because these two regions of the British colony developed differentiated in some respects conflicting and in some respects complementary systems of interests that the Federal capital, which had to co-ordinate and keep the two systems working together was located at the junction of these two economic and historical areas, at Washington on the Potomac.

This heritage from the colonial period determined a differentiation which made me decide that the Megaiopolis I was studying did not extend southwards beyond the metropolitan orbit of Washington, DC. As you see, my definition of Mega-

lopolis is not only one of form, but also of function and of social order. The functions are firstly economic, but as a result of the kinds of economic activity and of labor force required for that activity, these functions also became social at an early stage. Cities in the northern parts of Megalopolis, dominated by puritanical settlers of the Protestant faith, such as Boston, for instance, refused from the beginning to allow the importation of slaves into their midst. The first reason invoked was that slave manpower would compete for employment with unskilled white laborers. But in fact much deeper cultural forces, emphasizing the freedom of the individual, were at work. It was the region I now call Megalopolis that led the fight in America for the abolition of slavery.

The trading seaports scattered from Massachusetts to Chesapeake Bay, while competing among themselves, formed a sort of "economy hinge" of the North American continent. Standing at the contact of the high seas and of a gradually developing continent, these hinge cities linked two great networks organized largely through their endeavors: the maritime trade of America on the one hand, and the development of the continent inland on the other. From period to period the main weight of American interests oscillated from sea trade and overseas ventures to inland pursuits and back again. Whether the circumstances threw open the door of the American economy towards the outside or turned it inwards largely depended on decisions made in the string of eastern cities. They alone had enough capital, skill and authority to elaborate policies and profit by carrying them out. Once formed, the hinge benefitted from whatever general trend prevailed in the American economy. The major cities took the lead in the 18th century as the most successful seaports. Financial and cultural centers, that is, Boston, New York, Philadelphia, and Baltimore, remained the major urban centers in the United States until the end of the 19th century.

It is only in the 20th century that other cities in the center or west of the United States outgrew them in size. New York City remains, however, the leading transactional and information center of North America, and Greater Boston maintains a clear leadership as an intellectual center. In the southern reaches of Megalopotis, Washington, DC, the Federal capital has since 1800 been the seat of essential policy making and, in recent times, has assumed an increasing role in economic and social affairs, with the greater impact of the Federal administration on the life of the country.

Because of these antecedents the major cities in Megalopolis and a number of smaller cities around them became during the period of the Industrial Revolution the logical location for large-scale manufacturing development. Since the 1880s the rest of the United States has been developing faster than Megalopolis in terms of industrial production. This is a normal evolution, repeated in all the other countries of advanced economy: massive industrial growth has spelled decentralization of the tools of production from the rather narrow geographical area in which this growth first started and concentrated.

Surely an extremely impressive concentration of industriai plants remains in Megalopolis, especially along the main axis of it, in between the major old nuclei. For instance, in the State of New Jersey, one can observe today a massive industrial area quite comparable to what exists around London or in the Ruhr-Cologne conglomeration, although the exact types of industries may spell a somewhat different gamut. Increasingly, Megalopolis is specializing in the lighter industries, in an incubator function within the colossal American industrial machine, and even more in the higher level of services that now employ the fastest expanding sectors of the labor force: research, government, higher education, the financial services, and the technical services to public and private enterprises. On the scale of world history this megalopolitan urbanization is rather young: it is only 350 years old at most, which is a short time when compared with the major urban centers of Europe and Asia. However, it has grown so fast and so big because it has lived with the times and kept adapting to a rapidly changing technology and society.

I think that in my outline of the historical circumstances of growth I began to answer your question about the dynamics of urbanization in Megalopolis. The two first chapters of the book on Megalopolis (published in 1961) were entitled: The Main Street of the Nation and Prometheus Unbound. May I suggest that these two symbolical expressions, if you want to put them together, describe fairly well the present and past dynamics of this spectacular urbanization. The settlers who came mainly from Europe to this part of the world were deeply imbued with the Promethean spirit so characteristic of what we usually call "Western civilization." Migration to America gave them the feeling of being liberated from the shackles inherited by the countries of the Old World, from a long past, from rather rigid social and economic structures and from set cultural patterns. In America, despite the difficulties of the beginnings, there was general belief in new opportunity, greater freedom, potentially "unlimited resources" and also deep faith in a better future. The region where Megalopolis arose went through many crises, some of them prolonged, since the 16th century origins. The settlers were not discouraged. Many of those who immigrated through the seaports or who grew up in that area proceeded farther inland, on the great march westward. But the older cities continued to direct and manage the whole process, as they still now do.

Every technique brought to this area was tried out, and many innovations, although often conceived elsewhere, were developed here into massive experiments. The first skyscraper was built in Chicago, but it was in Manhattan that the first and largest skyline arose. The inventor of television, Zworykin, was a Russian engineer who had tried in vain to convince the powerful people in Europe to use his invention for a telecommunications network; he found the support he needed in New York and retired a few years ago in Princeton, NJ, after having directed research for one-third of a century at the Radio Corporation of America. These are two small examples out of a million. In a few pages of my book I stress that Megalopolis early made itself into a great market for talent drawing personnel from Europe, from the rest of the United States, and in recent times from the whole world. Let us say that it invented the "brain drain" and succeeded in putting it to work in very fruitful fashion because the spirit of Promethean endeavor was freed from its usual bonds.

The amazing thing is that these cities succeeded in concentrating all that market of talent and varied activities in what is geographically speaking a small corner of the territory of the United States. Perhaps this is not so extraordinary when we think of the lasting concentration of talent, culture, wealth and power in Paris, in London, or in Moscow. Large cities, once solidly established, have a remarkable capacity to assume and maintain a managerial role over vast areas for long periods of time. In the case of Megalopolis this was achieved by a string of cities that competed among themselves while still specializing and working together. The 600-mile-long axis from Boston to Washington was not only the economic hinge of the continent, but also the Main Street of the American nation. "Main Street" in a city stands for a market for talent, a center for decision making, a showplace and a string of more or less specialized crossroads. The main axis of Megalopolis has been, and still is, exactly that for the United States. Main Street is also visited by a great many who do not live or are employed there, but who come to Main Street to transact business, gather information, attend a ceremony, or take some kind of recreation.

Megalopolis today still receives a large number of migrants from other parts of America, but a good deal of its dynamics is due to the movement of transients that come for short visits either from the United States or from other parts of the world, for a variety of purposes.

Finally, the Main Street of America has attracted, during the last 20 years, a massive inflow of poor Americans, chiefly Puerto Ricans and Blacks, who come to the large northeastern cities in the hope of sharing in the opportunity offered by the proximity of wealth and power and in the benefits of generous welfare. A specialist in the economics of poverty has estimated that a black family living on welfare in New York City received in 1970 about eighteen times as much as a similar family in a small town of Alabama. No wonder then that one out of seven residents of New York City in 1971 was on public welfare. One might say that these great cities had become huge refugee camps maintained at government expense, and this evolution has driven most of the middle class residents to live in the suburbs. This has been another locai aspect of the urban dynamics of Megalopolis.

• **Perović:** What is the structure of Megalopolis? What are its poles of growth?

• **Gottmann:** I described the structure of Megalopolis as "polynuclear" and "nebulous." I may also add that the region is structured around a major axis that links together the main nuclei, that is, cities such as Boston, New Haven, New York, Trenton, Philadelphia, Wilmington, Baltimore and Washington. Megalopolis is a chain of metropolitan areas, and since every metropolitan area is usualty defined as a sort of regional cell with a central city in its midst that acts like the nucleus, it is logical that "a chain of metropolitan areas would be polynuclear." This character underlines the plurality of the origin and of the process of growth. It involves rivalry and coordination between the nuclei; history is commonly made of such apparent conflicts that convey also a basic complementarity. The plurality works better and has lasted longer in the Federal system of the United States. But I am also convinced that it added to the impetus of growth and to the impact of Megalopolis as a whole on overseas as well as inland development. For instance, at the beginning of the 19th century several of the leading seaport-nuclei began building canals to carry trade inland towards the Great Plains along the Mississippi River, where settlement and agricultural production were just started. New York City and Philadelphia were the main contenders in that race of the canals westward. New York won, with the famous Erie Canal, and, consolidated its position as a leader in commerce on the Northeastern seaboard. Since that time New York kept that leadership by a variety of means and now, when freight is of less importance and abstract transactions are of greater significance for a commercial center and for urban development, New York has consolidated its leadership in this respect.

As a city and metropolitan system, New York is a much bigger nucleus than any of the other cities strung along the main axis of Megalopolis. However, the other cities are also of considerable importance to Megalopolis and to its system of outside relations. This is certainly true in the case of Washington, DC, the Federal capital; of Philadelphia, a very large industrial and financial complex; and of Boston, which besides its cultural leadership remains an important seaport, and industrial and financial center.

While describing the major nuclei I began speaking, I suppose, of the "poles of growth." To be frank, I never have very much liked this expression which has become popular recently to designate certain focal points on the development plan of areas as yet little developed. Megalopolis is certainly not an area that we could call empty or "developing." True, it adds four to five million inhabitants every decade to its total population, and it is one of the major receiving areas of American internal migration. It is growing in different directions. However, it would be difficult to designate a few places as major poles of growth. The density of population and of land occupancy in the corridor along its main axis is constantly thickening. These filling-in and spreading-out effects occur, as usual, with greater speed, at a higher rate, in the sectors that were not densely urbanized previously.

Nevertheless considerable growth also continues in the central sectors of the major nuclei, such as Manhattan, central Boston, and Washington, DC, itself. This growth may be difficult to assess in terms of figures of population or even employment because the new development in the old central nuclei is not so much residential, as aimed at serving the needs of transactions, recreation, and collective rituals of transient visitors who reside not in that city but in the suburbs or even far away, and many of whom do not have their main employment in that city either.

Look at what is developing in the Back Bay area of central Boston with new office buildings, large hotels, department stores and such expanding institutions as universities on the one hand and the headquarters of Christian Science on the other. Is this a pole of growth? If we answer in the affirmative, we cannot support that assertion by population or employment figures. Manhattan is another example. "New York is Very Much Alive," as the title of a recent book puts it, if we judge by the building that goes on in Manhattan and the movement of people in its streets and buildings. However, as is well known around the world, Manhattan is losing population, even some employment, and has recently been given a reputation that frightens away crowds of would-be visitors. Nevertheless, in the last three years, at the peak of that crisis, more new office floor space was built there than in the previous 20 years when New York dominated the world economy; besides the office towers, several new theaters were opened, and more towers of both lower income and luxury apartments arose.

However, the most impressive growth of Megalopolis has not been polarized by the major cities but has sprawled across large bands of territory in between the cities and on both sides of the axial corridor. In this way, the structure has considerably increased its nebulosity. The region is becoming increasingly a complex magma of large well-structured nuclei, set amidst areas of sprawling suburbs, smaller more or less structured, cities and green spaces, much of these forested, extending between the dense spine of the axial corridor and the oceanic shore on one side or toward the Appalachian foot ranges on the other. A few limbs of thickening density along major lines of transport jut out in different directions. Even the axial corridor is taking on a more complicated shape because of this lively growth. For instance, 30 years ago the main axis linked Boston with New Haven via the cities of Worcester, Springfield, and Hartford; that was the line of the main railway connection and of the large industrial centers in this northern part of Megalopolis.

Today it looks as if the main axis may be passing closer to the seashore via Providence and New London. Perhaps it would be more accurate for such an area, on its huge scale, to speak of axes rather than poles of growth. Dr Clyde Browning, of the University of North Carolina, has recently completed an interestlng analysis of the spatial trends of growth within the urbanization of Megalopolis from 1950 to 1970. His map, to be shortly published, shows a variety of axes of growth radiating from each of the old major nuclei. It also shows, as might have been expected, that the influence of the main arteries of transport has shifted in orienting these axes from the waterways and railways to the modern great highways. The highway and the motorcar have obviously helped the sprawl and the

spreading out of the well-structured metropolitan centers of yesterday. However, this has meant the decline of only those central cities which have not been able to reconvert themselves to the new functions that generate growth and serve transients. So that a certain selection is working itself out amidst the megalopolitan cities; those that have been able to remain or become centers of management, government, education and information are doing much better than the others.

• **Perović:** Any study of the megalopolis concept must take into account its growth, so that its boundaries are constantly changing. This is well illustrated in your book *Megalopolis*, where two different areas – one for 1950 and another larger one for 1960 – are shown on the maps. What are the limits of growth of Megalopolis and what happens to its obsolete structures?

• **Gottmann:** You are quite right in raising the question of the boundaries of Megalopolis as a region. However. thls is a rather moot point. I belong to the French school of Geography which professed that, in the study of a given region, its center, the nucleus, the infrastructure are more important than the limits. The limits must be defined because it is indispensable to know exactly what territory one is covering and also to get homogeneous data. Statistical or other data are gathered for well-defined units, as designated by administrative decision. It is with these considerations in mind that I defined the region of Megalopolis I studied. I cannot quite agree with your remark that I gave in my book two different areas for Megalopolis, one as it was by 1950 and one for 1960. The first map shows a continuous stretch of areas of metropolitan economy as it had been defined on the basis of the 1940 Census by the statistician Donald J. Bogue and adopted by the U.S. Bureau of the Census in 1950. I used this cartographic and statistical concept as a starting point, or, if you wish, a skeleton on which I modelled my own concept of the Megalopolis region. My concept was somewhat wider, partly because, instead of the data and problems of 1940-1950, I worked with the data and problems of 1950-1960, and I knew through experience in the field that urbanization had spread and encroached on areas beyond Bogue's map. But also I included counties that did not show as metropolitan by census norms but were, in fact, in their land use and in activities, a direct adjunct of the megalopolitan axial corridor. For instance, one must remember that the census in the United States is usually taken around the first of April, so that people are counted at their main – that is, winter – residence. An area such as Cape Cod and its adjacent islands in Massachusetts appear to be rather rural and sparsely settled in the season of the census. Surveyed during the summer months, that area looks as very densely populated suburbia.

In fact, it has little economic activity apart from serving the recreational needs of a part of the megalopolitan population. The same is true of some hilly areas in New York State or Pennsylvania, such as the Catskills and the Poconos, or some of the seashore counties of New Jersey and Detaware. These areas were disregarded by Bogue for his purposes, but I wanted to include them into my concept of an expanded Megalopolis. Also it was more convenient to include the whole territory of the smaller states in Megalopolis, that is, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware and even Maryland.

This made the study of the political and administrative aspect more coherent. However, I could not do the same for the much larger and more diversified states of New York, Pennsylvania and Virginia, the larger parts of which were definitely not megalopolitan for reasons of both historical development and present economy.

Once I had come to this expanded outline, I stuck to it and I think that in 1975 it still fits the Megalopolis concept I had defined by 1960. It is a vast area not yet fully urbanized in the sense that it still contains some farming and wooded areas. It covers about 53,000 square miles and its population, which rose from 32 mllion in 1950 to 37 million in 1960, is now more than 40 million. The average density is close to 800 per square mile, which is an average density found in some of the more spread-out American cities.

The limits I have thus drawn were considered too wide by some of the American experts who have studied the evolutlon of Megalopolis since 1961. Marion Clawson and Clyde Browning, for instance, have preferred narrower limits than mine to show the processes recently developing in Megalopolis. They were mainly interested in the dense growth close to the axial corridor. This shows that I have been generous or perhaps just foresighted in drawing wider limits to fit better my purposes of considering, with the fully urbanized sectors, the periphery living under the impact of the adjacent urbanization.

The real question of growth overflowing the limits stated arises chiefly at the two ends of the main axis: north of greater Boston and south of greater Washington. There has been some expansion there in rather different ways but that could be considered an extension of Megalopolis since my limits were drawn. It would be, however, a matter of rather complicated debate whether the counties of New England in the north and of Virginia to the south in which a certain amount of suburbanization has now occurred, should or should not be included in the original concept of Megalopolis. In any case even their inclusion would not modify considerably the general outline. Some commentators, such as Lewis Mumford, have accused me of announcing a Megalopolis from New England to Florida.

This is sheer nonsense. The land use and other aspects of urbanization are evolving rapidly in many parts of the United States and in some other parts of the world. This does not mean that they will become the extension of one single area, even though the area described in my study of Megalopolis may have acted as the incubator of trends that have since appeared elsewhere. South of Washington the intensity of urbanization decreases fast.

Now as to what happens to the obsolete structures of Megalopolis. They evolve also and in different ways. The formerly rural farming sectors, abandoned by their populations sucked into the urban system, have either been developed for suburban uses or regained by the forest, which is the natural vegetation cover. In parts of Massachusetts, Connecticut and even Maryland, one could find in the 1950s and 1960s old crumbling farm buildings swallowed by recent forest growth, like vestiges of disappeared civilizations. I have shown on one of my maps and in statistical material that even during the post-war decade of rapid suburban sprawl (1946-1956) the woodlands expanded in certain areas adjacent to the main axial corridor.

As to the obsolete sectors in the urbanized or industrialized areas, most of them have undergone urban renewal or redevelopment to a large extent. It used to be said that in America city dwellings told the history of settlement and of the rapid succession of different waves of immigrants; first built as uptown residences of wealthy local people, they were later occupied by successive tenants who belonged to lower strata of the economic scale and were recent newcomers; as "uptown" moved farther away from the center, blight spread to the older structures. To some extent this process still goes on, and the latest wave of newcomers has brought Blacks from the south-east states. But with the new "welfare state" trend in America, public funds are used to redevelop these grey areas and give them a new look with new buildings and better physical standards. Obsolescence sets in in really distressing fash-

ion in the old cities that do not receive many new migrants and the centers of which retain a population of only old or very poor people. Such sections can be found in the western parts of Megalopolis in the old mining and heavy industry towns, some of which seem to be fading away. This, moreover, is also experienced in old coal-mining districts of the American Middle West and of northwestern Europe.

• **Perović:** What is the economic basis of Megalopolis? And what are the patterns of change in the economic activities within the area?

• **Gottmann:** The economic base is indeed enormous and extremely diversified. The permanent characteristic of the economic base has been and still is commerce. And a long and successful history of commerce establishes in the area a predisposition for the management of private and public affairs and for the role of the intermediary, connecting link between different economic activities and the needs of different outlying regions. Thus, we cannot be surprised that, after some 300 years of successful commercial activity, the cities of Megalopolis largely base their economic activity on abstract transactions and on government. However, the economic base is also supplied by the immediate daily needs of 40 million people of whom a large proportion are well paid and who, therefore, can afford a high level of spending. Because of the economic and political status of this Main Street of the American nation, megalopolitan cities have achieved the economic and political means of paying the local people well. This is obvious even in the higher rates of welfare benefits which attract the inflow of poor newcomers from the rural South. It is also apparent in the higher scale of salaries and wages paid to employees of state and local goverments, and these are quite numerous.

Mixing curiously with relatively highly paid lower strata of society, such as the unemployed, the street cleaners and so forth, we find in Megalopolis, and particularly in the axial corridor, the largest groupings of the very wealthy in America, usually residents of suburban counties working in the central business districts of the large cities. This is found in and around Washington, DC, New York City, Boston and Philadelphia. Such concentration of wealth results from employment in a variety of activities: many of the larger multinational corporations have their roots and their headquarters, or at least an important branch of their central offices, in Megalopolis. Even General Motors, a Detroit corporation, maintains a large financial office in Manhattan. Despite a great deal of talk about moving out of New York City, decentralization has worked more for industrial plants than for office activities. In a certain number of cases offices have deconcentrated to Connecticut or New Jersey, Long Island or Washington, that is, to other locations within the Megalopolis axial corridor.

A large growth of properly industrial establishments has also happened. But these are not so much big plants manufacturing goods in series, although some such plants are still coming to Megalopolis, too, because of the enormous consumption of the local market; the main development, an important sector of the present economic base, is in the research and development (R&D) stages of industry. Research laboratories and small specialized plants in the pioneering advanced sectors of rapidly evolving industries, such as electronics or pharmaceuticals, are still crowding and multiplying in New Jersey, Connecticut, and the vicinity of Boston or Philadelphia. Megalopolis continues to have an enormous role as an incubator of new designs and fashions, whether for computers, ballpoint pens, or women's and children's wear. Perhaps the present changes restructuring the economic activities in this area are just a manifestation of the cyclical migration of industrial activity. The more I have studied this fascinating movement in Megalopolis and other heavily urbanized parts of the world, the more it seems to me that we are now witnessing another stage in a cyclical movement. Economic historians of Western Europe have shown that in the Middle Ages cities concentrated manufacturing work within their walls from the 10th to the 12th centuries. From the 14th century on and until the latter part of the 17th century an outward migration of manufacturing work developed, scattering production of goods to villages and throughout the countryside. This dispersal has been explained by the increasing burden of costs and regulations in the larger cities under the heavy hand of guilds, corporations and local rulers. This outmigration did not cause cities to lose their momentum; they continued to direct, finance, and manage manufacturing production, controlling the marketing of goods and keeping an incubator function for the new industrial technology created by the Renaissance.

In the 18th century the Industrial Revolution initiated a new cycle, regrouping manufactures, this time with factories on a large scale, in substantial cities old and new. This is continuing in the 20th century with increasing industrialization; but a new trend has signalled a massive outward migration of the large plants from major cities, scattering the work of mass production. The outward movement is again caused by the pressures of increasing costs, congestion, taxation and regulation. It is encouraged by legislation that favors decentralization towards lagging or depressed regions. Again, the large cities have kept the general control of the industrial economy and the incubator function. The recent changes in Megalopolis illustrate trends of a long-range historical cycle in spectacular fashion.

The net result of these changes has been to base the megalopolitan economy more and more on transactional work employing mainly white collar personnel. I have insisted on this evolution in my book on Megalopolis, especially in the chapter entitled "The White Collar Revolution." This is not only what economists have described since 1961 as the advent of the post-industrial society and of the service economy. It is a move away from employment in the various stages of production, whether in agriculture, mining or manufacturing, towards employment in the whole gamut of services. Even more, in the case of Megalopolis, it is a concentration of manpower in the upper stages of the services.

The old definition of services involved mainly the activities of transportation, wholesale and retail trade handling goods, and domestic services; these were the "tertiary" activities defined by Colin Clark in the 1940s. The new concentration of employment is in what I proposed to call the "quaternary occupational activities," which deal mainly in abstract transactions and need to be concentrated in selected locations. They include the higher stages of management, government, research and development, mass media and publishing, higher education, banking, insurance and all the specialized extra advice needed by modern technology and the complex structures of modern society.

While specializing in these quaternary activities, the economic basis of Megalopolis remains vast and diversified. This region still produces a substantial volume of agricultural goods, especially animal products, and an enormous variety of manufactures. It produces almost everything we can think of from airplanes and milk to aspirin and zippers. Its size, after all, is that of an average nation, and its consumption even bigger. But the main function and income are found in the quaternary sector.

• **Perović:** You stated that Megalopolis is the greatest concentration of white-collar workers in the USA and in the whole world. How does it affect land use and living conditions?

• **Gottmann:** I believe that the rising importance of the white-collar workers employed in quaternary activities was the most interesting conclusion to emerge from my study of Megalopolis. Its significance is not only in the occupational changes it involves, but in the whole restructuring of modern society of which Megalopolis has been and still is the most impressive laboratory.

It was around 1955 that the number of white-collar workers in the whole of the United States surpassed the number of blue-collar workers. Few people noticed this, although it was a great moment in world history. In 1960 I asked the International Labour Office in Geneva if they knew of another country with more non-manual than manual workers. The answer was "No, no other at present, unless you want to count Monaco. But this trend will soon spread to other countries." It was significant that the first country to have achieved a majority of non-manual workers was also at the time the largest agricultural, mining and manufacturing producer in the world. Our technology has liberated the worker from the constraints of the hard back-breaking stages of production.

The production processes, including the most complicated, have been increasingly mechanized, rationalized, automated, and fewer people have to be tied down to the machines. Mechanization has not enslaved labor as so many had forecast. White-collar work is certainly not leisure, and it can be exacting. But it is physically easier and socially it opens new perspectives of evolution to the laboring masses.

Especialiy in the rapidly developing sector of the quaternary occupations, white-collar work deals with a raw material which is multi-faceted, diversified, rather abstract, and which can best be described as information in all its forms. Whether in government, management, research, education, legal or medical practice, the essential stages consist in gathering, classifying, transmitting, analyzing bits of information.

All the decisions made by white-collar people are based on these kinds of transactions. The personnel so employed has to be competent, that is, specially trained, and responsible. Much of the gathering and interpretation of information requires team work by specialists, discussion, planning meetings, conferences, etc. All this creates a substantially different way of life, with more human contacts, more specialization, more nervous strain, perhaps more leisure but also more interpenetration of work and recreation, than for the old blue-collar categories of workers.

Indeed, the restructuring of society to adapt to the new needs of the work force has rapidly become apparent, first in Megalopolis, then in the United,States as a whole, and now increasingly in all the countries of advanced economy. First of all, it is apparent in the landscape itself, with the rise of the skyscrapers or other massive office structures, such as the dense skyline of office towers in Manhattan or the heavy government buildings multiplying in and around Washington, DC.

The rapidly swelling quantity and variety of information made available to the institutions in Megalopolis forces on the personnel the creation of more and more specialization. A self-refining division of labor constantly subdivides quaternary personnel and demands more contacts and teamwork within it. Hence the need of millions of offices close to one another, so that matters could be better discussed.

Also the need for millions of telephone lines, for Telex networks and other means of communication. Hence also the mushrooming of convention and other meeting facilities with the attendant hotels, restaurants, secretarial services and recreational facilities. To the old tradition of pilgrimage, we now add the professional collective rituals, which require special buildings and diversified equipment, including computers, museums, and libraries. The gathering of information also entails the consequence that white-collar work is often done less well by remaining in one single place. In fact, it generates an enormous and intensive traffic of people and messages within a city and between cities. Urban life for quaternary personnel is more nomadic than sedentary and, up to a certain point, people seem to love it.

Of course, our cities are not organized for this new way of life. The rise of skylines solves a few problems but compounds others. Decentralization policies increase the chaotic character of this evolution. Masses of welfare recipients, attracted to the large transactional centers by the lure of new opportunity and easy work but totally unprepared for quaternary occupations, increase the tensions within the metropolis. We must rethink what these essential changes mean for our concept and design of urban life. Most of us have not yet realized the permanence and enormity of the changes. We are still under the spell of the traditional moral rules that emphasize the virtues of physical work to achieve production.

An essential component in this transition is education. More and better education and training are required for transactional and technological work. Hence the spread and size of university campuses. By 1966 the number of people employed in a faculty and administrative capacity by establishments of higher education in the United States surpassed the whole employment of the mining industries, which are huge industries in America. By 1970 the clerical, technical and managerial personnel of manufacturing industries represented one third of their total employment. This is, of course, a general trend, not restricted to Megalopolis, but its origins and consequences may be best observed here.

• **Perović:** During the Ninth General Assembly of the World Society for Ekistics held in Athens in autumn 1974, you gave us an explanation of an age-old dilemma of town planners and city administrators about the size of human settlements, which had its roots in ancient Greek philosophy and politics. Then you explained to us the Platonic model of a city as a small, static and introvert community and the Alexandrine concept derived from Alexander the Great's political philosophy of homonoia, or in terms of human settlements, a spatial organization of various countries and by a network of large new cities as growth poles based on international trade. From your own writings I would conclude that your views are more Alexandrine in nature than Platonic. Would you explain to us how you see the opportunities that Megalopolis offers to its inhabitants?

• **Gottmann:** You are quite right in assuming that I disagree with the Platonic model. Plato visualizes a world of small, equally developed islands, within a rather stabilized economic system. There have been few periods in history endowed with stability. The experiment coming closest to the Platonic model was the isolation of Japan under the Tokugawas for 200 years. This made Japan weak and practically defenseless when, in the middle of the 19th century, foreign navies decided to open it up to trade and outside influences. In the middle of a dynamic world the isolation of a territorial unit is fraught with danger and can seldom last, unless it is a small remote corner of the world, like Bhutan.

In our time of momentous change a static model offers little interest. What country today would accept isolation with backwardness even if given a guarantee of being left alone in peace? In academic life nowadays one often meets students who enthusiastically espouse the ideal of "no growth." However, these same students are the first to protest if electric

lighting in the streets is reduced or the petrol supply in the pumping stations is restricted. They see "no growth" as the means of maintaining the comfort they derive from the latest technological and economic progress.

This is pure illusion. In the interdependent world woven by the 20th century we must turn towards a more Alexandrine type of model.

What I appreciate particularly in the networks of large trading cities created or expanded by Alexander the Great and, at other periods of history, by the Roman Empire, the British Commonwealth and other large political systems, is their recognition of the interdependence and complementarity existing in the geographical space they deal with. All these systems base their infrastructure on networks of cities. This is not only because cities spring up at crossroads of international trade and that it is difficult to conceive of an efficient large-scale trading organization operating without cities. The main point is that cities are centers of administration of the region around them, and that administration must deal with the economic life, that is, the management of production, transport and distribution of goods, services and credit, within the orbit of the city. Whether that administration is conducted entirely by public authority or with the widespread participation of private enterprise is a detail in the functioning of the system. Even if no competition is allowed within a regional or city framework, the cities and the regions themselves will compete at the same time as they will co-operate and exchange among themselves. In a world inhabited by people whose masses want comfort, happiness, the opportunity provided by freedom of movement, technological innovation and the Promethean spirit, it is in the nature of cities to direct the development of their respective regions and to ensure the communications and linkages between their region and other parts of the world.

The evolution that led to our present human condition, with the prospect of liberating the workers from the constraints of hard physical work and of attachment to the land – this same evolution has produced the huge urbanization that we are witnessing. The formation of vast urbanized regions, of which Megalopolis provided the prototype, results from all these trends. Obviously an urbanized, dense conglomeration of 30 to 50 million people cannot thrive unless it is in a network of dynamic interconnections with many other parts of a diversified and far-flung world. Its function of a continental hinge is what created Megalopolis and the formula sums up, I think, the spatial opportunities its cities developed and took advantage of.

It is very important to realize that the cities planned by Alexander, or at later periods by followers of his ideas in planning, were not simply trade centers. They were also administrative centers, and they contained a mixture of populations, a cultural mixture and an economic diversity. This pluralism enabled them to deal with problems and relations beyond their immediate vicinity. In his famous speech at Opis, Alexander developed the theme of the cultural and social pluralism he intended to foster. I think that such pluralism is deeply imbedded in the very nature of urban growth and large city life. Megalopolis owes a great deal to the variety of the waves of immigration it received. Too often urban planners picture the ideal city as a well-structured, static, homogeneous community. This may be the heritage of Platonic philosophy, of a monistic and static ideal which greatly simplifies the political problems but which has seldom been found in reality.

• **Perović:** The process of urbanization and extensive urban growth is in our time a worldwide phenomenon. Using any strict comparative definition, Megalopolis is the biggest urban agglomeration that exists today. The fact that it has an average income above that of the richest nation as a whole may demonstrate to other countries the kinds of problems which they may experience if they reach the American level of urbanization and mass living standards. To what extent are the lessons from Megalopolis applicable to other urban concentrations in the world?

• **Gottmann:** I am afraid that the American Megalopolis I studied is no longer the biggest urban agglomeration of today. In the 1970s this title can rightly be claimed by the Tokaido Megalopolis in Japan, which encompasses some 50 million people and is growing very fast. It would be extremely interesting to see impartially conducted, comparative studies of several of the megalopolitan growths existing around the world. To my mind, megalopolitan size really begins above 25 million people in a continuous area. Such formations can be found in five parts of the modern world: besides the American northeastern sea-board and the Tokaido region. C.A. Doxiadis has described an American Great Lakes Megalopolis, the Canadian extension of which is being investigated by Alexander Leman; a British team directed by Peter Hall has defined a Megalopolis-England, comprising the Southeast around London and the English Midlands; and I.B.F. Kormoss, of the Collège d'Europe, has outlined a megalopolis in northwestern Europe that covers most of Benelux plus the Ruhr-Rhineland complex. To these five agglomerations we may have soon to add a sixth, in Brazil around the Rio de Janeiro-São Paulo axis. These enumerations show, I think, that megalopolitan size and density may cover very different levels of wealth, living standards and modes of life. Perhaps some of the problems of Megalopolis are repeated in rather similar fashion in the two great concentrations on the two sides of the North Sea. Even there. however, the structures are fairly different. My study of Megalopolis dealt with a situation where sprawl was uncontrolled and even encouraged; where public transport was practically discouraged and the motor car preferred to rail transport. Planning controls and transport policies are quite different in Europe and certainly in Japan.

Despite the diversity which requires every region to think for itself and to choose its own way of life and solutions, some general lessons for other large urban concentrations can probably be drawn from the experiment of Megalopolis. One of these lessons is to recognize early enough the constraints of density when it reaches a high level for a very large mass of people. Personally, I believe that greater compactness of settlement, less waste of space and, therefore, of landscape is most desirable. Rapid transit should be organized and maintained to obviate public services and amenities, the demand for which is bound to increase in the megalopolitan conditions of education, density and size. I realize of course that many forces within the specific American circumstances made it particularly difficult to apply the foregoing prescriptions.

Finally, one lesson is of general and lasting portent: that is, the white-collar revolution driving the modern city towards a "quaternary age." The basic transformation of society under way will recast urban life to befit new needs which are difficult to imagine. Our thinking about cities is far too conditioned by the difficulties of the evolution and the illusion of a paradise lost in the time of our fathers that would have been ideal for our children. An ancient philosopher said that Megalopolis was the "city of ideas that determines the material city we really build." In practice we know that material forms and processes inherited from the past restrict our thinking. This is an interplay between the spirit and the material world with which we have to live, but we can live better with it once we accept the evidence of change and the imperative need to use the power of imagination.