

PSYCHOBIOLOGICAL CONSEQUENCES OF URBAN STRESS

by

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Discussion Paper

on

Kiyonori Kikutake's

UTOPIAN PARADIGMS OF METROPOLIS

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Committee III: Human Beings and the Urban Environment:

The Future Metropolis

Psychobiological Consequences of Urban Stress

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After three realistic and pragmatic contributions of this committee on the phenomenon of metropolis, this session is devoted to utopian thoughts about the paradigms of future urban organizations such as Kikutake's marine metropolis.

As a commentator, I will discuss the effects of such metropolitan agglomerations on the human being, on his value systems, on his quality of life and on his psychology. I would prefer to say on his psychobiology because there is no clear demarcation between somatic and psychic effects; biological and sociocultural factors are in a close mutual influence and their separation is almost impossible. We can never lose sight of the unity and diversity of the human beings (RAMIREZ 1974, 1975).

I must confess that I am not the kind of person prone to predictions or conjectures about the future, for the following reasons: 1. Experience often shows that predictions are not as easy and straightforward as they sometimes appear to be; and 2. I feel myself a passionate fan of human freedom and therefore according to my deep feelings, I believe that the future of mankind is far from being determined. On the contrary, it will become what people--especially scientists like you--want it to be.

Although I believe that the future metropolitan organization does not have to necessarily be a "gargantuan necropolis" and that the metropolitan megastructure is

not inevitably a gigantic and restrictive urban environment, recent trends seem to go toward other more rewarding and viable directions.¹ I will take it for granted, at least as a working hypothesis, and I will endeavour my paper to highlight some possible psychobiological consequences of such urban agglomerations.

Before addressing the variety of pressures exerted by the man-made urban environment, in particular focussing on their deleterious effect on the human psychobiology, two things should be clarified: First, most of the problems to be discussed are not specifically urban ones, although it might be in urban areas where they used to be more frequent; they are the price we pay for the progress of the human civilization. Second, it would be unjust to leave a too-pesimistic impression of the urban phenomenon. If we focus only on the negative side, it is just because that is what needs a remedy. We should not lose sight of the positive consequences of urban society. Urbanization is a desirable worldwide phenomenon that provides both an irresistible lifestyle and a pattern of allocation of human effort and time (Psomopoulos, ICUS XIII).

1. In fact, as some of you (eg. Dwyer Johnson Marshall and Robertson) have pointed out, rather than a trend towards a future enormous conurbation, in its pejorative meaning of "spreading of a great coral reef" (Geddl, 1915), today we posit a centrifugal force as the cause of the out-migration movement from many big cities. Such a trend towards greater suburban dispersal of the population--the "counterurbanisation" in terms of Berry, 1981--implies the subsequent growth of non-metropolitan areas, of self-sustaining and harmonious distribution through the region of independent networks of human settlements that offer work, living and recreation in close proximity, outside and above the metropolis, both mentally and physically. In few words, this approach of life style in the future seems to be similar to that described by Lewis Mumford (1961) as "the invisible city."

Although the harsh realities of the new mass slums of metropolitan areas have destroyed the dream for millions, the thought of returning to their villages would be an even greater nightmare. The urban lifestyle offers advantages in comparison to the rural areas: lower mortality rates and more effective health services, a higher level of culture and education, a better quality of life. Since cities offer an environment which is more stimulating and permeable to progress and culture, they have always been the intellectual, social and political catalysts, the prime movers of innovation of all civilization (Ramirez, 1978; Dwyer and Johnson-Marshall, ICUS XIII). Even though a metropolis faces many problems, it seems more attractive for living than a village. Avoiding the deleterious consequences of urban gigantism, therefore, does not mean to go back to ruralization.

One of the major factors of stress brought by urban development is the excessive crowding produced by the continued concentration of heterogeneous population. This increasing overcrowding implies the growth of a number of important socioeconomical and psychobiological problems. The urban environment with its excessive use of cars, elevators and the like, coupled with a scarcity of space, does not facilitate the practice of physical exercise. On the contrary it has a negative effect on the physiological development of our organism. For example, researchers have observed in Hong Kong that children living in flats and leading inactive lives had 8 percent less lung capacity than children of hillside squatters who led a very active outdoor life (Nicholson, 1984).

The fast life, the fatigue, the isolation, the stress and the heavily congested traffic which are part of the way of life in the big cities produce other acute negative effects on health besides traffic accidents. The physical pollution resulting from the accumulation of harmful industrial wastes, garbage disposal, sewage systems, smoke, omission of carbon dioxide and other toxic gases,

"deafening" noises and vibrations from various sources (Ramirez, 1978, 1984) may be the cause of even more serious disturbances since their symptoms are chronic and difficult to detect due to their subtle nature. Likewise, the morbidity rate increases in crowded environments due to stress factors such as fatigue which weakens the organism, making it more susceptible to disease. Malnutrition and the lack of proper hygiene and sanitation facilities add to the misery of living in many urban environments. Respiratory-track diseases are more serious in nature when they occur in places like crowded urban settings which lack proper ventilation.

Of special interest are the psychic consequences of urban overcrowding. It is widely agreed that crime, deviant behavior and human segregation are higher in urban areas, that they increase as the cities grow, and that slums and squatters are a source of unrest, violence and delinquency, as Wyss (ICUS XIII) reminds us. The erosion of the quality of life and of social relationships is a consequence of many interrelated stress factors, such as excessive pressure and stimuli, a sometimes too-fast generational change, scarcity of infrastructure facilities and the coping problems which usually follow migration. Let us comment on some of them.

The excessive pressure of the big cities encourages a lack of solidarity and cooperation with others, a hypertrophy of competitiveness and, consequently, a lack of consideration towards others, again increasing stress, tension and aggressiveness. Incidentally, a very simple index of tension may be the speed of walking. Since people in big cities in the United States are under much more pressure, they are observed to walk twice as quickly as those in small towns. The lack of altruism characteristic of big cities, in contrast with the kindness and affability of people helping you in a little village, brings to mind the observation of Darley that people were more ready to help others in the underground than in the airport. He suggested that people are used to helping others in different ways in different

places depending on the level of environmental stimuli. Novelty was found to be an inhibitor of helping in that people were more ready to help one another in the subway because most of them used it daily for commuting. Consequently, they were very acquainted with that environment and therefore received less novelty stimuli.

It has been demonstrated (also thru experimentation, see Ramirez, 1978, 1984) that crowding could alter feelings, increase anxiety and influence other affective behaviors. For example, crowding increases the propensity to aggressive behavior. I am sure that many of us have also noticed in ourselves a tendency to bad temper when the phone rings at an improper time: it is a small example of those too-many contacts with strangers, characteristic of modern urban society, bombarding us with an excess of information and stimuli. These sources of conflict, tension and stress bring about a fatigue of our social reaction process as well as forcing the disruption of our own personality. Without any need of describing extreme pathological cases, inhabitants of a modern city are familiar with the excessiveness of social relationships and know the disturbing feeling of not being as pleased as he ought to be at the visit of a friend, even if he is genuinely fond of him and has not seen him for a long time (Lorenz, 1966; Lipowski, 1971; Ramirez, 1978). This excessively accelerated life-pace with an overabundance of contacts with strangers accompanies a weakening of family bonds and the disappearance of personal relationships within the inner circle of neighborhood groups. The result is that people, especially the younger ones, feel they are living anonymously with a lack of responsibility, with a sense of loneliness and even alienation. This might explain, at least partially, the higher rates of suicide in urban environments and in the so-called "welfare" societies.

The socioeconomical pressure typical of a too rapid and disproportionate rise in urban aggregations carries a shortage of public facilities, typified by a lack in

educational and social programs, poor housing, and the depletion of vital resources, with its resultant squatting, unemployment and poverty. Man needs to have a decent home with enough free space for personal privacy, where he can move without being bothered nor intruded upon. The fact that unemployment leads to a higher rate of deviant behavior, crime and aggressiveness does not seem exclusive of our species. It has also been observed in captive wolves and Rhesus monkeys (Murie, 1944; Scothwick et al., 1965) that when their chief occupation of hunting for food was taken away due to human feeding, there was an increase in quarreling. An effective way for decreasing violence, therefore, seems to be to guarantee full employment.

Another problem of human adjustment, pointed out by Psomopoulos (ICUS XIII) and studied by the Population Crisis Committee, are related to immigration movements. Frequently there is strong anti-immigrant sentiment among the original population which is shown as aggressive reactions towards alien newcomers of different ethnic, religious, linguistic or social groups. The problem of cultural and social integration of such minorities is even more difficult when large numbers of people have been separated from their family, friends and cultures. The fact that such situations are prone to social disintegration and to the breakdown of interpersonal relationships explains their prevalence of aggressiveness and violent situations.

Another candidate for urban stress, according to Tinberger (1976), is the high pace of generational change, whereby with each new generation it becomes harder for young people "to understand" their parents because of their different mentality (Ramirez, 1968). This tendency produces in the new generation a great anxiety and uncertainty. Socially disruptive behavior develops, as does rebellion against restrictions through too many regulations and rules limiting an individual's own

freedom of decision and action (Muller, ICUS XIII). Their climate of continuous dissatisfaction and unhappiness makes them look for satisfaction and happiness through other ways, which usually are wrong. Often escape through alcohol and drugs is attempted, resulting in an increased rate of deviant behavior and violence in urban environments (Goldstein, 1975).

Is there any pathological characteristic of the modern megalopolis? Psychobiological aberrations show a higher rate in congested areas; let us mention a few of them. There are various somatic illnesses and respiratory diseases due to the increased possibility of contagion, humidity and irritant gases. Due to the lack of sunshine, rickets also presents a problem, as with increased ulcers, diabetes, arteriosclerosis, obesity due to inactivity, loss of hearing from the excess of noise, and hypertension.

There are also frequent behavioral disorders resulting from new social circumstances. Current figures from psychiatric sources indicate that in our particular form of urban culture there is a high occurrence of disorganized personalities: one person in five has serious psychiatric difficulties during his lifetime, and one in ten will at some time enter a mental hospital. What is disorganized in them? Primarily, it is their social relationship which seems to be maladaptive (Scott, 1958).

Even though we have noted stress factors which are common to any metropolis, we should notice that an exclusively global consideration of the problem, thinking that people behave under environmental pressure without any regional or individual difference, would be wrong. We cannot ignore that it is not a unitarian phenomenon, but there is a diversity in the supply of environmental situations as well as in the psychobiological and genetical ideosyncrasies of each person.

Cities evidence individualization and diversification, which are proof of their

vitality. The quality of living conditions reflects a great variety of need and wants depending upon historical experiences, social background, religious convictions, current ideologies, cultural conditions and economic circumstances. The feeling of crowding, for example, depends upon the cultural and sexual context--males seem to need more space than females (Harnett, Bailey, Gibson, 1970)--and even individual differences. Each person perceives in a different way the same environment and so behaves and is influenced by it in a particular way. To demonstrate this fact all that is needed to do is ask a group of people to draw from memory the map of their city or to describe a place known by all of them. You will see how much their subjective appreciation differs from the same objective reality, each one emphasizes what is more important for him.

An experiment carried out by Eliasz and his Polish colleagues shows how people of different temperament behave differently and are also differently influenced by the urban environment. Boys of 15 and 16 years of age were observed in different districts of an industrial city of Silesia, and their spontaneous activity was measured during their free time in downtown, where there were more sources of stimulation (noise, danger, novelty...), and in the periphery of the city, with a less stimulating atmosphere. Two groups were assessed by a temperament inventory: high-reactive persons, who were very sensitive even to low stimuli but with less endurance to them, and low-reactive people, with a low susceptibility to stimuli but with high endurance to strong ones.

Whereas high-reactive boys behaved most of the time in the same way in both places, in conformity with what adults expected as their correct behavior for their age, low-reactive ones showed a more spontaneous and independent behavior, adjusted to the space and the possibilities. For instance, in the periphery where there was room enough, they often played soccer, while downtown they would

rather go to the movies, clubs and the like.

How may we interpret those data? The threshold for stimuli and in the range of optimum differs according to the individual temperament: low-reactive people are more resistant to social pressures; they behave in the same way in different environments regardless of their high or low level of stimuli, and are more tolerant. On the contrary, high-reactive people regulate their own behavior according to social regulations, trying to be in conformity with others control and to avoid punishment and personal tensions; they are more susceptible to changes in their motivation. In sum, since there is a high level of stimuli in our urban society, there will be a lot of problems with high-reactive people. Individual differences, therefore, have to be taken into account when we study how people behave under any environmental pressures. Individual conditions require individual approaches.

Since I have pleaded from the beginning against any determinism of our future, I have no doubt at all that there is a real alternative to the deleterious effect of the present megapolis. If we want a better social environment, the remedial measures have to be directed to: 1.) change the environment, reducing its most damaging pressures, and 2.) change the society, making future humans more able to cope with their habitat, because as Dubos (1965) reminds us, man may adjust himself quickly to harsh, unusual and even potentially dangerous environments.

First, a practical result of this scientific approach may be the growing mastery of our habitat, using the facilities provided by modern technology for making our environment more suitable to all of us and for avoiding the disadvantages of a gigantic conurbation. But avoiding the gigantism, it must be emphasized, does not mean necessarily to go back to the rural setting. Rather, we must adjust the architecture and the urbanism so that the city could be qualitatively better--more space, cleaner air, less congestion and decreased sensory overload² --and let its

inhabitants have a more pleasant and attractive lifestyle, becoming a place apt not only for "living" and "surviving", but also for "enjoying together with others." For this, among other things, it must be realized that for what citizens really want we cannot provide general and universal rules.

As we mentioned earlier, lifestyle preferences are not the same for the inhabitants of Amsterdam or Palo Alto, for the sake of examples, any more than for those of Vallecitas or Cincinnati. We must revive and encourage the citizens to actively participate in the decision-making process, instead of "thinking" for them. This is valid also for the children. For example, urbanists, instead of trying to organize already prepared playgrounds, are not allowed to ignore that children are more interested in "unprepared" places rather than in the "prepared" by adults, because they prefer to "create" something by themselves and to organize their playgrounds in their own "infantil" way.

2. Given the characteristic sensory overload of urban environments, it is advisable to apply a selective principle with regard to the hour in which to use time and energy, blocking the reception of those with less priority, for instance, every year there are more telephone numbers not included in the directory, as to avoid unwanted calls--and to filter them as to decrease the stimulation intensity.

Second, we scholars have to commit ourselves to "producing" a new type of man with expertise in many sciences--mainly in those concerned with education and knowledge of the psychobiological development of humans. Imaginativeness and flexibility of mind are required, and enough motivation for participation in the formation of a better urban environment. For that, Tinberger (1976) suggests a biologically more balanced form of education, with more scope for playful, exploratory and imitative self-teaching. I would add to such a regimen more self-control and seek to eliminate the sense of indifference towards others. Antisocial behavior could be counteracted by mutual interaction, and mechanisms of adaptation could be developed adequate to the peculiar environmental tone and experiences of each city. Do not forget human plasticity: man is psychobiologically adaptable to very different environments over the course of time.

Some of the interventions suggested at sessions of this committee--mine included--might have given the impression that man has lost control over the tools used to form his environment on a more human scale. It may even seem that he is oblivious to what his real needs are, to what he wants to do and to where to go from here, if you will allow me to repeat Psomopoulos' words. But we cannot fall prey to the pessimistic approach of feeling ourselves powerless in front of such trends for the future metropolis. On the contrary, that is an example of how scientific endeavour can positively influence the attitude of the entire society. We have to help man in finding his own road--without imposing it--diagnosing the problems, prescribing a cure, perhaps different to each one according to his own idiosyncrasy, and, what seems to me more important, preventing eventual deleterious effects.

A Spanish proverb says: "prevenir vale mas que curar", or as they say in English, "An ounce of prevention is worth a pound of cure," through the

participation in this task of multidisciplinary experts and having as a goal the physical and spiritual well-being of all mankind. If we put the reason and the knowledge in the preeminent place they deserve, against the menace of environmental stress, the power of the human will and freedom will always be safeguarded.