

Articles

Address delivered at the *Aspen Institute for Humanistic Studies*, on July 29, 1966
upon the occasion of the Receipt of the Aspen Award

Anthropocosmos. The World of Man

1. Introduction

I was leaving for the airport in Athens when I learned by telephone from Dr. Eurich that I, following a composer and a dancer, had been chosen to receive the third Aspen Award - the award which had moved from music through dance to structures: from sound to movement and to "shells. " I started to think about the possible links between the three.

First I remembered the dancing steps of the men in Delphi mentioned by Pindar, then the Chinese dancer, who, having climbed the many steps of a temple, told the monks that two steps were missing. When they dug at the base of the staircase the two steps were found. Maybe the connection between man, music, movement, and space is an aesthetic one.

But as I drove through congested streets surrounded by man-bearing machines, breathing in their fumes, hearing the noise they made competing for space, I had to admit that my present relationship with space is an economic one, a question of biological survival rather than an artistic one.

Man and the space surrounding him are connected in many ways within a very complex system. Man's space is just a thin layer on the crust of the earth, consisting of the five elements which shape him and are shaped by him: Nature, in which he himself lives; the society which he has formed; the shells (or structures) which he builds; and the networks he constructs.

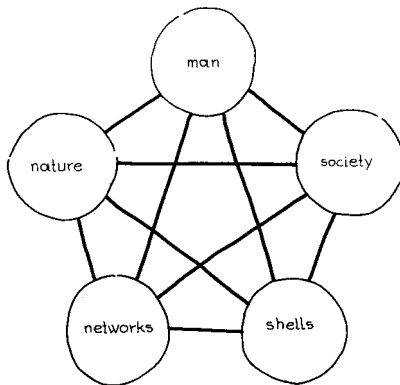
This is the real world of man, the anthropo-cosmos half way between the electron and the universe. It is with this world, and with its relationship to man, that I will deal here.

2. From crisis to disaster

With these thoughts I boarded my plane for Benghazi. Once in the air I felt relieved to be away from the city and all its dangers. It had taken me thirty minutes to drive to the airport, longer than it used to take an ancient Athenian on horseback. On the other hand now I can reach Benghazi in seventy minutes instead of fifteen days, that is, three hundred times faster, even though travel in the city is slower even than in the past.

From my altitude I could see the city of Athens partially covered by smog, the famous hills wounded by stone quarries, the rivers turned into drains, the blue sea-water striped black with waste oil dumped by ships. We talk about purification and, yes, we do purify the air in our buildings, but we pump the contaminated air into the streets - as was done with sewage in the Middle Ages - to be inhaled next time we walk out to get some "fresh air."

Human society does not operate as it did in the past since natural human contacts are fewer in our cities with increasingly lower densities. Of course we have cars - but not all of us do, certainly not the children who miss their grandparents, and certainly not the underprivileged citizens. Of course we have tele-communications - but how can a telephone replace a father at bedtime, and how can television replace the contact of the two sexes? More and more people pour into the cities and often social or racial elements come into conflict, which we are not prepared to face.



Anthropocosmos and its elements

We have built larger and taller buildings, but at the same time we have isolated man inside them. Human contact is possible at one level, head to head and feet to feet, not head to feet as in multi-storey buildings. We have limited our life, within their sterilized atmosphere, and we have eliminated such natural expressions of it as works of art in the open. The age-old love affair between man and buildings is being destroyed in our cities.

We are building modern networks in order to facilitate transportation and telecommunications. But the results we are getting are negative for man - we are arriving at a paradox: the higher the speed of his means of transportation the longer it takes man to reach the center of his cities. It took man ten minutes to reach it in the eighteenth century, thirty in the nineteenth, and it takes him one hour today.

It is in this environment that civilized man has to live - safe from infections but threatened by degenerative diseases, safe inside his home but not in the streets, isolated in the crowd, exposed to neuroses and psychoses - how many of these conditions are not caused by the fact that our children are caught by the hand in the streets, taught that they live in hostile surroundings. Man is turning into a troglodyte hiding deep inside his buildings, a modern centaur-half-motor-car, a nomad escaping from home and city.

We must now face the fact that modern man has failed to build adequate cities. In the past his problems were simpler, and he solved them by trial and error. Now human forces and mechanical ones are mixed and man is confused: he tries and fails. We say he will adapt. Yes, he is running the danger adapting, since adaptation is only meaningful if it means the welfare of man. Prisoners, too,

adapt to conditions. We cannot justify our actions by examining solely the behavior of man in today's city. For man to adapt to our present cities would be a mistake since he is the great prisoner. Not only is man unsafe in his prison, he is facing a great crisis and heading for disaster.

3. Setting goals

Confused by the danger, man behaves unwisely. He takes the new conditions of a hostile habitat for granted, and, for example, builds new cities in the image of those that failed, or builds air-conditioned schools with no windows in the countryside because he is accustomed to doing it in industrial areas. Sometimes he attempts to turn to the past, or dream of utopias which have no place in our world.

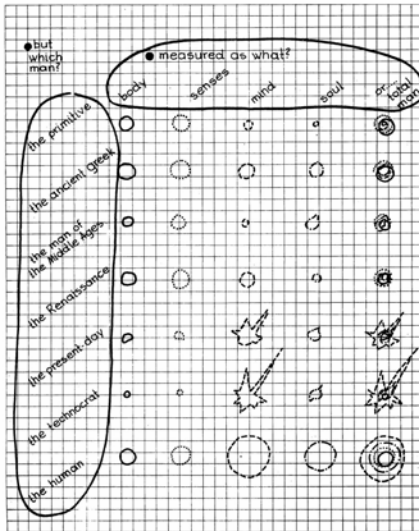
What man needs is an En-topia, an "in-place" which he can build, a place which satisfies the dreamer and is acceptable to the scientist, a place where the projections of the artist and the builder merge.

How can man achieve this? To answer such a question, we have to understand our subject, and to do this we must remember that only one subject is of primary importance - man as an individual. The subjects of secondary importance are nature and society. Shells and networks come last. Every element of the anthropocosmos has to serve man, otherwise our endeavor would have no justification.

So how can we best serve our basic subject, man? What is our goal? At this point we have to admit that we have no goals. We are developing a technology that is changing our life, yet we have set no goal for it. No businessman would buy machinery at random when building a factory, no housewife would collect furniture at random for her home. And yet this is exactly what we are doing in the case of our cities, the physical expressions of our life. For them we are producing and collecting at random.

So, how can we best serve the nature, the interests, and the ideals of man? What will our goal be? From the present I turn to the past and remember what Aristotle said, that the aim of the city is to make man happy and safe. I can find no better definition.

So if, in the chaos of our present situation, we can accept this, then we have something firm to stand on, provided we can define what we mean by Man, Happiness, Safety, and City. It would be safer at this point to state that I know very little about these subjects, but since that would lead nowhere I will go ahead and attempt to speak about them.



Man is the measure!

4. Man

I begin with Man, so close to us and still "man the unknown." But he is also man the unique and complex organism, the ascending arrow of evolution according to science.

But which Man are we talking about? Which one is it who best represents the nature of man? Is it primitive man, to whom some Romantics want us to return, or the ancient Greek? The medieval or renaissance man, or the modern technocrat? The only possible answer is: The contemporary man - he is our starting point. Contemporary man both as a human being, in general abstract considerations, and as individual, since in life we deal only with individuals.

Which Man, then, is our ideal? To answer we have to look at man from every possible angle. We have to look at the body, and, when we see people stretching or youngsters rock-n-rolling, realize that their bodies are revolting against the inactivity we have condemned them to. We have to realize how ignorant we are as to whether the taller, larger people, which our children are becoming, are more resistant to the hardships of life.

And we must look beyond the body. Man transcends this sphere by many other concentric ones defined by his senses. No sensation can be overlooked - a sweet or bitter taste, caressing a marble carving or a loved one, walking on sand with bare feet, the smells, the sounds, the sights, all physical sensations, and then all metaphysical ones like faith and religion.

The mind of man carries him into areas which cannot be reached through the senses. So does his soul by way of sentiments, for sentiments too are shaping factors.

I cannot forget the peasant on the mountains of Kabylia in Algeria: the talk we had proved how he was aware that it was in his interest to abandon his destroyed village and move to the plain. "Then why do you still live here?" I asked. "C'est un amour," was his answer. Then there was the Cypriot intellectual who explained to me the many reasons why Cyprus should not be united with Greece, then applauded enthusiastically when a speaker defended the Unification. When I asked about it he placed his hand over his heart and said "You forget this."

Body, senses, mind, and soul are only partial aspects of man, but they cannot be separated, they all operate together in health and in sickness. A dancer may find his motivation through stimulation of his senses, or mind, or sentiments. The real link between music and architecture lies within man. The mind can be stimulated through the rhythmical movement of the body walking or swimming. We must not forget the example of the peripatetic

philosophers.

Science is beginning to merge the separate images of man that it had set up and see him again as a whole. Common man finds perfection in the *complete* man. When, for example, one is contemplating marriage, not *one* aspect of the prospective mate is overlooked. And history demonstrates how in his great eras man believed in developing all his capacities harmoniously.

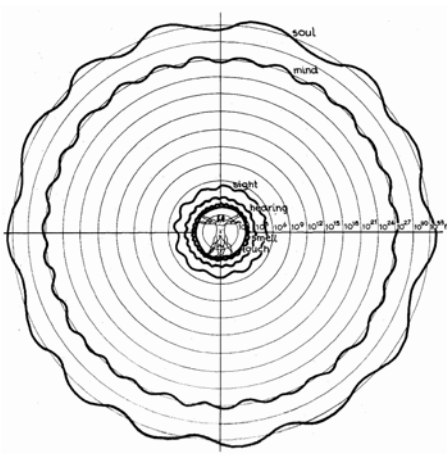
At present we are at a disadvantage since we have not been studying man properly and have formed no concept of our ideal man. Because of this, man's body and his soul are developing in a non-harmonious way, according to the mind rather than the senses. And even the mind is not developing harmoniously in all its areas but only in some, which are expanding much more than before, while others become atrophic. What kind of creature is this man going to be? The risks we are running by allowing the present trends to continue are very great. We may be turning out monsters without proper balance between their different parts, monsters who may annihilate one another or mankind as a whole.

Confronted with such a threat I think we have a twofold obligation: first to study man as a whole, without rejecting anything that he has learned throughout his history unless we can prove scientifically that it is harmful. This we can achieve not by coordinating existing sciences - man does not consist of externally coordinated parts since he forms a whole - but by Anthropics, the science of man. Second, in the absence of any proof that we can produce a better man by changing the relationship between the body, the senses, the mind, and the soul to work towards a complete man with a harmonious development of all his elements. This should be our goal, to work towards a complete, harmoniously developed, total man, whom I cannot name anything but human Man.

5. Happiness

Now I turn to happiness, although I know that the mere mention of the word provokes smiles. I beg the skeptics to forgive me but I cannot omit dealing with this aspect of life. Even though some scientists cannot accept this discussion because happiness cannot be measured, it is still happiness that the common man dreams of and which represents the fulfillment of his goals, the satisfaction of his interests. This is admittedly a difficult subject but we cannot work towards man's welfare unless we understand it. We should not let the existence of the immeasurable stop us from measuring what is measurable.

Rather than become involved with the philosophical or metaphysical meaning of happiness, I will proceed to measure it by standard operational methods. Since we



Total man

speaking of "human" happiness, we should measure it according to the quantity of satisfaction felt by man as seen in his different aspects. One can be very unhappy if one's trousers are too tight, the ceiling too low, or the temperature uncomfortable -- also because of other similar physiological reasons. But one can be equally unhappy if the senses suffer -- in a room painted red, for example, since one's eyes are not used to it, or through noise, smell, coarse clothes or bad food. Also through stresses exercised on his mind or soul. Man's happiness depends on the alleviation of the stresses he is subject to within his social environment or within himself.

These stresses can be relieved -- there is, for example, the story about the man who always wore tight shoes so that when he'd take them off at home the physical relief would help him put up with an unhappy home life.

But man can also learn to enjoy these stresses. As the balance between man and his environment changes continuously, his chances for happiness change too. So what is of major importance is man's capacity for happiness. This capacity man is either born with -- we could perhaps express it by an H. Q. or Happiness Quotient -- or acquires or loses by training. A proper science of Anthropics can develop a scientific H.Q. which will be of the greatest importance to man.

By such approaches man can hope not only to alleviate or enjoy stresses, as the case might be, but also to work towards his further betterment drawing from within himself something better than himself. This can be gradually achieved when he begins to understand how to coordinate his internal rhythm with that of his environment by changing the one or the other. He will have a variety of choices, ranging from harmony with the physical world, matching his footsteps to the pavement slabs, to harmony with nature, swimming along with the waves, to harmony with others, in the rhythmical marching of parades or in work for the amelioration of his society, to harmony with external influences, dancing to a certain tune, to the complete freedom of climbing a mountain or lying on its slopes as it pleases his internal personal rhythm.

When man understands all these he can develop a formula for the lasting happiness of the human man, based on the interplay of man and environment which is a dynamic balance; a happiness which he can reach without endangering the happiness of others.

6. Safety

Safety is a concept just as difficult as happiness and just as indispensable. Civilization started when man first felt safe within his city. Today, for the first time in history

since then, he is no longer safe, and this constitutes the greatest problem to be faced by him and his civilization. How can the city be made safe once more?

This question has to be answered through an analysis of *all five* elements of the anthropocosmos since the neglect of any one would upset the whole system. Nature has to be preserved since without the proper development of all its resources there can be no hope for man's safety. The survival of man depends on his evolutionary resources and on his inborn diversity; consequently he needs a free democratic society which will allow for the survival of the greatest variety of individuals, since we don't yet know which type is going to lead to a better total human man.

Every single individual must feel and be safe, which means that personal safety within a safe society can regulate personal and group conflicts. The question is, at what cost can this be achieved? A man would be much safer if he never left his home, but he wouldn't be happy and he wouldn't develop further. We cannot sacrifice happiness and evolution in the cause of safety, nor safety in the cause of happiness.

So we come to the conclusion that what we need is a safety which can guarantee a basis from which to begin our endeavors toward happiness and the fulfillment of our duties to society. This leads to the concept of a system which

will allow for different environments offering all degrees of safety, ranging from the absolute one, if possible, for newborn babies and invalids, to a completely natural environment which young people will have to conquer; ranging from sterilized rooms to jungles.

In such a habitat we can hope for the best balance between controlled and uncontrolled environment which will offer man the maximum safety, and allow the dynamic balance of man and environment which is indispensable for lasting happiness, which is the only goal.

7. The new frame

We can now turn our attention to the city of man, but not with preconceived notions about limiting the operation of forces which are independent of man, as people very often do. We must understand that, unlike Utopia, our entopia depends on forces which are dynamic and which are either uncontrollable or controllable only in the long run. It is these forces which create a new frame for the city to come.

The dynamic forces of developing humanity show that we must be prepared for a continuing increase of population which may well reach 20-30 billion people by the end of

the next century, at which time it may level off. This will mean a universal city, ecumenopolis, which will cover the earth with a continuous network of minor and major urban concentrations of different forms. This means that urbanization will continue, and that eventually farming may be carried out from urban settlements. This also means that the pressure of population on resources will be such that important measures will have to be taken so that a balance can be retained between the five elements of the anthropocosmos in a universal scale.

But, more than with all separate phenomena, we should be concerned with the survival of man, who, long before the earth has exhausted its capacity for production, will be subjected to great forces pressing him to the point of extinction, forces caused by the elimination of human values in his settlements. If only we realize that at that point the average urban area will have 20-30 times more people and a hundred times more machines, and that difficulties grow much faster than the forces causing them, we will understand that this new frame is going to be inhuman in dimensions.

8. On the measure of man

If we understand how far the dynamic forces reach, we will see that our real challenge lies not in changing these historical trends -- something we cannot do anyway -- but in using them for the benefit of man by shaping this universal city in such a way that not only it will not crush man, but so that it will provide him with a human settlement much better than those of today. In order to do this we have to build the city of inhuman dimensions on the measure of man. We have repeated for centuries that man is the measure of all things -- the time has come to put that principle to use again.

We cannot just talk about human scale and human happiness, we have to identify them and attempt to measure them. This can be done since man has, for ten thousand years, been building a great laboratory in which he is both the guinea-pig and the research director. This laboratory we have before us and we have to make use of it. We don't have to *invent* the "human" solutions since they already exist -- we have to understand them and use them within the new frame.

As an example I will mention that a careful study of the cities of the past proves that the maximum distance from their centers was 10 minutes, and the average one 6 minutes, meaning that people walking for a total of 30 minutes a day could visit the center or other places two or three times. This shows that there was a human dimension influencing social and other contacts, but it also shows one example of how it may be possible to measure a fundamental aspect of the human city -- on the basis of

the time dimension and not that of physical dimensions since we now have new means of transportation and communications.

The need for such measurements arises from the consideration that in order to build a shell for a snail we have to first know how the snail moves. Building the city of man requires an understanding of the laws governing his movement, not as it is manifested in his present prison, but as it would be ideally.

Up to now measurements in cities have been based on economic criteria, but these define feasibility more than goals. It is time for man to define goals and their feasibility at the same time. Instead of economic abstractions, for all our measurements we must introduce abstractions that combine goals and feasibilities. Man's most precious commodity, the one which cannot be replaced and which we don't yet know how to expand, is his own life which is expressed by its length or life-time. This is the basic commodity, as qualified by the satisfaction and safety man enjoys and as limited by economic considerations, upon which our formula for the city will have to be based.

Man, in this case the average American citizen, spends 76% of his life-time at home (males 69% and females 83%), and 24% away from it. He spends 36% sleeping, 20% working, and 10% eating, dressing and bathing. He is left with 34% or one third of his life, for leisure, pleasure, thought, etc. It is this one third which constitutes the basic difference between man and animal. But males between 20 and 59, have only 20% of free time, of which one third is spent in commuting. This means 90 minutes; but for some people it means 3 hours or two thirds of their free time. On the basis of such calculations we can develop a time budget, which is more important than any other budget for man, and estimate how much time each man can afford to spend on each of his activities.

We can then qualify the satisfaction that man gets at every time length. Is it better for him, for example, to walk for twenty minutes, drive in a Volkswagen for ten or in a Cadillac for two hours? We can also try to measure the degree of safety at every time length. In principle then, total satisfaction would be the product of time multiplied by satisfaction. A happy life would be the product of time multiplied by satisfaction multiplied by safety. In this way we will arrive at a mathematical formula of happiness. This does not mean at all that such a formula would be a compulsory one just as no economic formula can be imposed on anyone; nor does it mean that we should confuse the average or normal universal with the individual which after all is our only concern.

If we now insert into the picture the factor of economic

feasibility for satisfaction, we have the formula of feasible happiness, which is leading to the human city that we can build, our common Entopia which should include all our personal Entopias in a balanced whole, the Entopia which is the common denominator of our feasible dreams.

The goal set by Aristotle, which, at the time, did not need scientific interpretation since all units of space were small and all dimensions human, has now to be achieved by way of new methods which are indispensable for the coordination of the many superimposed natural and artificial dimensions into one system.

9. The human city

If we have managed to define human man, natural happiness and reasonable safety and measure them, we can define the human city. It will be very big but it will consist of two categories of parts, the cells and the networks. The cells are going to be the size of the cities of the past, no larger than 50,000 inhabitants, no larger than 2,000 by 2,000 yards, no larger than a ten-minute average walk. They will be built on a human scale on the basis of human experience.

The networks are going to be absolutely mechanical and automatic, interconnecting the cells by transportation and communications, forming enormous organisms with the cells as basic units. Their vehicles will reach speeds of many hundreds of miles, their arteries will be underground, not highways but deep ways, as they are in the bodies of all mammals -- the higher the speed the deeper they will go.

In the cells man will be offered all choices, from isolation and solitude to very intense participation in social and political life. The fact that we need TV should not lead us to the elimination of the market-place. We don't need only oneway communications, we need a natural human dialogue as well.

The surface of the city will allow the flora to spread again, beginning from small gardens within the cells, to major zones of forests above the tunnels of the networks, to big farming areas and natural reserves where man will find the rough conditions which he also needs.

Society will operate much more efficiently, and people will come together in a multitude of both natural and artificial ways.

Houses will be the natural environment, not formally specified since there the individual will want to express himself. Normal multi-storey residence buildings will need much greater areas per floor so that a whole community will be able to operate at each level, a community with its

shopping center, play-grounds and public squares. Automated factories will be placed within the earth, especially in hills and mountains.

Man will be free to move over the surface of the whole city, and even though the buildings will be as pleasant as possible, he will have many chances of walking or staying out without shelter or protection, since his whole organism must be kept fit for all sorts of adjustments that the future may necessitate.

In this city we can hope that man, relieved of all stresses that arise from his conflict with the machine, will allow his body to dance, his senses to express themselves through the arts, his mind to dedicate itself to philosophy or mathematics and his soul to love and to dream.

10. Epilogue

It has often been said that man may exterminate himself through science. What we must also say is that man's hopes for a much better evolution lie in science which, after all, is the only acquisition of a proven universal value that he can transmit from generation to generation. The whole difference between extermination and evolution lies in the goal that science will set.

Our habitat is the world of man, our goal can only be human happiness and safety leading to the human city. To achieve it we need Anthropics, the new science based on the wholeness of man to help us study and develop him, since we cannot achieve this by simple coordination of his separate aspects. We also need Ekistics to help us study and develop the world of man, the Anthropocosmos. To develop these sciences we have to break the barriers between disciplines. The task is hard but it can be accomplished through proper research and careful selection of those who are to implement it -- very few minds can work so synthetically, since it will be required at every moment that they rise above the uni-directional evolution of ideas of specialists to a multi-dimensional one.

The task is hard. People must learn to recognize that they must be very conservative when dealing with man, and very revolutionary when dealing with new systems and networks.

The task is hard since many expect magical solutions overnight or formulas for the immediate solution of the problems; they actually like to talk about sufferings and they do not understand that cities face such acute problems because man does not have a system of values with which to define what a good life is. That is what the city he must build should provide for.

Personally I am convinced that the root of all problems in our cities lies in our minds, in our loss of belief in man and in his ability to set goals and to implement them. This is why I decided today to speak about goals and conceptions, to emphasize that there is where the solution lies.

We can never solve problems and tackle diseases unless we conceive the whole. We cannot build a cathedral by carving stones but only by dreaming of it, conceiving it as a whole, developing a systematic approach, and only then working out the details. It is for this reason that I thought that the Aspen Award should go to the Athens Center of Ekistics which tries to create the City of Man.

But dreaming and conceiving is not enough. We have to carve the stones and lift them and this is why I try hard to help build all sorts of cities because we can learn only by building and suffering.

Faced with the practical every-day difficulties I turn to myself and ask whether we can build the human city. My body is beginning to get weaker, my senses, especially my eyesight, do not help me as in the past, but my mind advances in knowledge and sees the confirmation of this possibility, and my soul mobilizes my whole self into a very positive affirmation : Yes, mankind can build the human city.