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THE KIND OF PROBLEM A CITY IS

Thinking has its strategies and tactics too, much as other forms of action have. Merely to think about cities and get somewhere, one of the main things to know is what *kind* of problem cities pose, for all problems cannot be thought about in the same way. Which avenues of thinking are apt to be useful and to help yield the truth depends not on how we might prefer to think about a subject, but rather on the inherent nature of the subject itself.

Among the many revolutionary changes of this century, perhaps those that go deepest are the changes in the mental methods we can use for probing the world. I do not mean new mechanical brains, but methods of analysis and discovery that have gotten into human brains: new strategies for thinking. These have developed mainly as methods of science. But the mental awakenings and intellectual daring they represent are gradually beginning to affect other kinds of inquiry too. Puzzles that once appeared unanalyzable become more susceptible to attack. What is more, the very nature of some puzzles are no longer what they once seemed.

To understand what these changes in strategies of thought have to do with cities, it is necessary to understand a little about the history of scientific thought. A splendid summary and interpretation of this history is

included in an essay on science and complexity in the *1958 Annual Report of the Rockefeller Foundation*, written by Dr. Warren Weaver upon his retirement as the foundation's Vice-President for the Natural and Medical Sciences. I shall quote from this essay at some length, because what Dr. Weaver says has direct pertinence to thought about cities. His remarks sum up, in an oblique way, virtually the intellectual history of city planning.

Dr. Weaver lists three stages of development in the history of scientific thought: (1) ability to deal with problems of simplicity; (2) ability to deal with problems of disorganized complexity; and (3) ability to deal with problems of organized complexity.

Problems of simplicity are problems that contain two factors which are directly related to each other in their behavior—two variables—and these problems of simplicity, Dr. Weaver points out, were the first *kinds* of problems that science learned to attack:

> Speaking roughly, one may say that the seventeenth, eighteenth and nineteenth centuries formed the period in which physical science learned how to analyze two-variable problems. During that three hundred years, science developed the experimental and analytical techniques for handling problems in which one quantity—say a gas pressure—depends primarily upon a second quantity—say, the volume of the gas. The essential character of these problems rests in the fact that . . . the behavior of the first quantity can be described with a useful degree of accuracy by taking into account only its dependence upon the second quantity and by neglecting the minor influence of other factors.

> These two-variable problems are essentially simple in structure . . . and simplicity was a necessary condition for progress at that stage of development of science.
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> It turned out, moreover, that vast progress could be made in the physical sciences by theories and experiments of this essentially simple character . . . It was this kind of two-variable science which laid, over the period up to 1900, the foundations for our theories of light, of sound, of heat, and of electricity . . . which brought us the telephone and the radio, the automobile and the airplane, the phonograph and the moving pictures, the turbine and the Diesel engine and the modern hydroelectric power plant . . .

It was not until after 1900 that a second method of analyzing problems was developed by the physical sciences.

> Some imaginative minds [Dr. Weaver continues] rather than studying problems which involved two variables or at most three or four, went to the other extreme, and said, "Let us develop analytical methods which can deal with two billion variables." That is to say, the physical scientists (with the mathematicians often in the vanguard) developed powerful techniques of probability theory and of statistical mechanics which can deal with what we may call problems of *disorganized complexity* . . .
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> Consider first a simple illustration in order to get the flavor of the idea. The classical dynamics of the nineteenth century was well suited for analyzing and predicting the motion of a single ivory ball as it moves about on a billiard table . . . One can, but

> with a surprising increase in difficulty, analyze the motion of two or even three balls on a billiard table . . . But as soon as one tries to analyze the motion of ten or fifteen balls on the table at once, as in pool, the problem becomes unmanageable, not because there is any theoretical difficulty, but just because the actual labor of dealing in specific detail with so many variables turns out to be impractical.
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> Imagine, however, a large billiard table with millions of balls flying about on its surface . . . The great surprise is that the problem now becomes easier: the methods of statistical mechanics are now applicable. One cannot trace the detailed history of one special ball, to be sure; but there can be answered with useful precision such important questions as: On the average how many balls per second hit a given stretch of rail? On the average how far does a ball move before it is hit by some other ball? . . .
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> . . . The word "disorganized" [applies] to the large billiard table with the many balls . . . because the balls are distributed, in their positions and motions, in a helter-skelter way . . . But in spite of this helter-skelter or unknown behavior of all the individual variables, the system as a whole possesses certain orderly and analyzable average properties . . .
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> A wide range of experience comes under this label of disorganized complexity . . . It applies with entirely useful precision to the experience of a large telephone exchange, predicting the average frequency of calls, the probability of overlapping calls of the same number, etc. It makes possible the financial stability of a life insurance company . . . The

> motions of the atoms which form all matter, as well as the motions of the stars which form the universe, all come under the range of these new techniques. The fundamental laws of heredity are analyzed by them. The laws of thermodynamics, which describe basic and inevitable tendencies of all physical systems, are derived from statistical considerations. The whole structure of modern physics . . . rests on these statistical concepts. Indeed, the whole question of evidence, and the way in which knowledge can be inferred from evidence, is now recognized to depend on these same ideas . . . We have also come to realize that communication theory and information theory are similarly based upon statistical ideas. One is thus bound to say that probability notions are essential to any theory of knowledge itself.

However, by no means all problems could be probed by this method of analysis. The life sciences, such as biology and medicine, could not be, as Dr. Weaver points out. These sciences, too, had been making advances, but on the whole they were still concerned with what Dr. Weaver calls preliminary stages for application of analysis; they were concerned with collection, description, classification, and observation of apparently correlated effects. During this preparatory stage, among the many useful things that were learned was that the life sciences were neither problems of simplicity nor problems of disorganized complexity; they inherently posed still a different kind of problem, a kind of problem for which methods of attack were still very backward as recently as 1932, says Dr. Weaver.

Describing this gap, he writes:

> One is tempted to oversimplify and say that scientific methodology went from one extreme to the other . . . and left untouched a great middle region. The importance of this middle region, moreover, does not depend primarily on the fact that the number of variables involved is moderate—large compared to two, but small compared to the number of atoms in a pinch of salt . . . Much more important than the mere number of variables is the fact that these variables are all interrelated . . . These problems, as contrasted with the disorganized situations with which statistics can cope, *show the essential feature of organization*. We will therefore refer to this group of problems as those of *organized complexity*.
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> What makes an evening primrose open when it does? Why does salt water fail to satisfy thirst? . . . What is the description of aging in biochemical terms? . . . What is a gene, and how does the original genetic constitution of a living organism express itself in the developed characteristics of the adult? . . .
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> All these are certainly complex problems But they are not problems of disorganized complexity, to which statistical methods hold the key. They are all problems which involve dealing simultaneously with a *sizable number of factors which are interrelated into an organic whole.*

In 1932, when the life sciences were just at the threshold of developing effective analytical methods for handling organized complexity, it was speculated, Dr. Weaver tells us, that if the life sciences could make significant progress in such problems, "then there might be opportunities to extend these new techniques, if only by helpful analogy, into vast areas of the behavioral and social sciences."

In the quarter-century since that time, the life sciences have indeed made immense and brilliant progress. They have accumulated, with extraordinary swiftness, an extraordinary quantity of hitherto hidden knowledge. They have also acquired vastly improved bodies of theory and procedure—enough to open up great new questions, and to show that only a start has been made on what there is to know.

But this progress has been possible only because the life sciences were recognized to be problems in organized complexity, and were thought of and attacked in ways suitable to understanding that *kind* of problem.

The recent progress of the life sciences tells us something tremendously important about other problems of organized complexity. It tells us that problems of this *kind* can be analyzed—that it is only sensible to regard them as capable of being understood, instead of considering them, as Dr. Weaver puts it, to be "in some dark and foreboding way, irrational."

Now let us see what this has to do with cities.

Cities happen to be problems in organized complexity, like the life sciences. They present "situations in which a half-dozen or even several dozen quantities are all varying simultaneously *and in subtly interconnected ways.*" Cities, again like the life sciences, do not exhibit *one* problem in organized complexity, which if understood explains all. They can be analyzed into many such problems or segments which, as in the case of the life sciences, are also related with one another. The variables are many, but they are not helter-skelter; they are "interrelated into an organic whole."

Consider again, as an illustration, the problem of a city neighborhood park. Any single factor about the park is slippery as an eel; it can potentially mean any number of things, depending on how it is acted upon by other factors and how it reacts to them. How much the park is used depends, in part, upon the park's own design. But even this partial influence of the park's design upon the park's use depends, in turn, on who is around to use the park, and when, and this in turn depends on uses of the city outside the park itself. Furthermore, the influence of these uses on the park is only partly a matter of how each affects the park independently of the others; it is also partly a matter of how they affect the park in combination with one another, for certain combinations stimulate the degree of influence from one another among their components. In turn, these city uses near the park and their combinations depend on still other factors, such as the mixture of age in buildings, the size of blocks in the vicinity, and so on, including the presence of the park itself as a common and unifying use in its context. Increase the park's size considerably, or else change its design in such a way that it severs and disperses users from the streets about it, instead of uniting and mixing them, and all bets are off. New sets of influence come into play, both in the park and in its surroundings. This is a far cry from the simple problem of ratios of open space to ratios of population; but there is no use wishing it were a simpler problem or trying to make it a simpler problem, because in real life it is not a simpler problem. No matter what you try to do to it, a city park *behaves* like a problem in organized complexity, and that is what it is. The same is true of all other parts or features of cities. Although the interrelations of their many factors are complex, there is nothing accidental or irrational about the ways in which these factors affect each other.

Moreover, in parts of cities which are working well in some respects and badly in others (as is often the case), we cannot even analyze the virtues and the faults, diagnose the trouble or consider helpful changes, without going at them as problems of organized complexity. To take a few simplified illustrations, a street may be functioning excellently at the supervision of children and at producing a casual and trustful public life, but be doing miserably at solving all other problems because it has failed at knitting itself with an effective larger community, which in turn may or may not exist because of still other sets of factors. Or a street may have, in itself, excellent physical material for generating diversity and an admirable physical design for casual surveillance of public spaces, and yet because of its proximity to a dead border, it may be so empty of life as to be shunned and feared even by its own residents. Or a street may have little foundation for workability on its own merits, yet geographically tie in so admirably with a district that is workable and vital that this circumstance is enough to sustain its attraction and give it use and sufficient workability. We may wish for easier, all-purpose analyses, and for simpler, magical, all-purpose cures, but wishing cannot change these problems into simpler matters than organized complexity, no matter how much we try to evade the realities and to handle them as something different.

Why have cities not, long since, been identified, understood and treated as problems of organized complexity? If the people concerned with the life sciences were able to identify their difficult problems as problems of organized complexity, why have people professionally concerned with cities not identified the *kind* of problem they had?

The history of modern thought about cities is unfortunately very different from the history of modern thought about the life sciences. The theorists of conventional modern city planning have consistently mistaken cities as problems of simplicity and of disorganized complexity, and have tried to analyze and treat them thus. No doubt this imitation of the physical sciences was hardly conscious. It was probably derived, as the assumptions behind most thinking are, from the general floating fund of intellectual spores around at the time. However, I think these misapplications could hardly have occurred, and certainly would not have been perpetuated as they have been, without great disrespect for the subject matter itself—cities. These misapplications stand in our way; they have to be hauled out in the light, recognized as inapplicable strategies of thought, and discarded.

Garden City planning theory had its beginnings in the late nineteenth century, and Ebenezer Howard attacked the problem of town planning much as if he were a nineteenth-century physical scientist analyzing a two-variable problem of simplicity. The two major variables in the Garden City concept of planning were the quantity of housing (or population) and the number of jobs. These two were conceived of as simply and directly related to each other, in the form of relatively closed systems. In turn, the housing had its subsidiary variables, related to it in equally direct, simple, mutually independent form: playgrounds, open space, schools, community center, standardized supplies and services. The town as a whole was conceived of, again, as one of the two variables in a direct, simple, town-greenbelt relationship. As a system of order, that is about all there was to it. And on this simple base of two-variable relationships was created an entire theory of self-contained towns as a means of redistributing the population of cities and (hopefully) achieving regional planning.

Whatever may be said of this scheme for isolated towns, any such simple systems of two-variable relationships cannot possibly be discerned in great cities—and never could be. Such systems cannot be discerned in a town either, the day after the town becomes encompassed in a metropolitan orbit with its multiplicity of choices and complexities of cross-use. But in spite of this fact, planning theory has persistently applied this two-variable *system of thinking and analyzing* to big cities; and to this day city planners and housers believe they hold a precious nugget of truth about the *kind* of problem to be dealt with when they attempt to shape or reshape big-city neighborhoods into versions of two-variable systems, with ratios of one thing (as open space) depending directly and simply upon an immediate ratio of something else (as population).

To be sure, while planners were assuming that cities were properly problems of simplicity, planning theorists and planners could not avoid seeing that real cities were not so in fact. But they took care of this in the traditional way that the incurious (or the disrespectful) have always

regarded problems of organized complexity: as if these puzzles were, in Dr. Weaver's words, "in some dark and foreboding way, irrational."*

Beginning in the late 1920's in Europe, and in the 1930's here, city planning theory began to assimilate the newer ideas on probability theory developed by physical science. Planners began to imitate and apply these analyses precisely as if cities were problems in disorganized complexity, understandable purely by statistical analysis, predictable by the application of probability mathematics, manageable by conversion into groups of averages.

This conception of the city as a collection of separate file drawers, in effect, was suited very well by the Radiant City vision of Le Corbusier, that vertical and more centralized version of the two-variable Garden City. Although Le Corbusier himself made no more than a gesture toward statistical analysis, his scheme assumed the statistical reordering of a system of disorganized complexity, solvable mathematically; his towers in the park were a celebration, in art, of the potency of statistics and the triumph of the mathematical average.

The new probability techniques, and the assumptions about the *kind* of problem that underlay the way they have been used in city planning, did not supplant the base idea of the two-variable reformed city. Rather these new ideas were added. Simple, two-variable systems of order were still the aim. But these could be organized even more "rationally" now, from out of a supposed existing system of disorganized complexity. In short, the new probability and statistical methods gave more "accuracy,"

*E.g., "a chaotic accident," "solidified chaos," etc.

more scope, made possible a more Olympian view and treatment of the supposed problem of the city.

With the probability techniques, an old aim—stores "properly" related to immediate housing or to a preordained population—became seemingly feasible; there arose techniques for planning standardized shopping "scientifically"; although it was early realized by such planning theorists as Stein and Bauer that pre-planned shopping centers within cities must also be monopolistic or semimonopolistic, or else the statistics would not predict, and the city would go on behaving with dark and foreboding irrationality.

With these techniques, it also became feasible to analyze statistically, by income groups and family sizes, a given quantity of people uprooted by acts of planning, to combine these with probability statistics on normal housing turnover, and to estimate accurately the gap. Thus arose the supposed feasibility of large-scale relocation of citizens. In the form of statistics, these citizens were no longer components of any unit except the family, and could be dealt with intellectually like grains of sand, or electrons or billiard balls. The larger the number of uprooted, the more easily they could be planned for on the basis of mathematical averages. On this basis it was actually intellectually easy and sane to contemplate clearance of all slums and re-sorting of people in ten years and not much harder to contemplate it as a twenty-year job.

By carrying to logical conclusions the thesis that the city, as it exists, is a problem in disorganized complexity, housers and planners reached—apparently with straight faces—the idea that almost any specific malfunctioning could be corrected by opening and filling a new file

drawer. Thus we get such political party policy statements as this: "The Housing Act of 1959 . . . should be supplemented to include . . . a program of housing for moderate-income families whose incomes are too high for admission to public housing, but too low to enable them to obtain decent shelter in the private market."

With statistical and probability techniques, it also became possible to create formidable and impressive planning surveys for cities—surveys that come out with fanfare, are read by practically nobody, and then drop quietly into oblivion, as well they might, being nothing more nor less than routine exercises in statistical mechanics for systems of disorganized complexity. It became possible also to map out master plans for the statistical city, and people take these more seriously, for we are all accustomed to believe that maps and reality are necessarily related, or that if they are not, we can make them so by altering reality.

With these techniques, it was possible not only to conceive of people, their incomes, their spending money and their housing as fundamentally problems in disorganized complexity, susceptible to conversion into problems of simplicity once ranges and averages were worked out, but also to conceive of city traffic, industry, parks, and even cultural facilities as components of disorganized complexity, convertible into problems of simplicity.

Furthermore, it was no intellectual disadvantage to contemplate "coordinated" schemes of city planning embracing ever greater territories. The greater the territory, as well as the larger the population, the more rationally and easily could both be dealt with as problems of disorganized complexity viewed from an Olympian vantage point. The wry remark that "A Region is an area safely larger than the last one to whose problems we found no solution" is not a wry remark in these terms. It is a simple statement of a basic fact about disorganized complexity; it is much like saying that a large insurance company is better equipped to average out risks than a small insurance company.

However, while city planning has thus mired itself in deep misunderstandings about the very nature of the problem with which it is dealing, the life sciences, unburdened with this mistake, and moving ahead very rapidly, have been providing some of the concepts that city planning needs: along with providing the basic strategy of recognizing problems of organized complexity, they have provided hints about analyzing and handling this *kind* of problem. These advances have, of course, filtered from the life sciences into general knowledge; they have become part of the intellectual fund of our times. And so a growing number of people have begun, gradually, to think of cities as problems in organized complexity—organisms that are replete with unexamined, but obviously intricately interconnected, and surely understandable, relationships. This book is one manifestation of that idea.

This is a point of view which has little currency yet among planners themselves, among architectural city designers, or among the businessmen and legislators who learn their planning lessons, naturally, from what is established and long accepted by planning "experts." Nor is this a point of view that has much appreciable currency in schools of planning (perhaps there least of all).

City planning, as a field, has stagnated. It bustles but it does not advance. Today's plans show little if any perceptible progress in comparison with plans devised a generation ago. In transportation, either regional or local, nothing is offered which was not already offered and popularized in 1938 in the General Motors diorama at the New York World's Fair, and before that by Le Corbusier. In some respects, there is outright retrogression. None of today's pallid imitations of Rockefeller Center is as good as the original, which was built a quarter of a century ago. Even in conventional planning's *own given terms*, today's housing projects are no improvement, and usually a retrogression, in comparison with those of the 1930's.

As long as city planners, and the businessmen, lenders, and legislators who have learned from planners, cling to the unexamined assumptions that they are dealing with a problem in the physical sciences, city planning cannot possibly progress. Of course it stagnates. It lacks the first requisite for a body of practical and progressing thought: recognition of the kind of problem at issue. Lacking this, it has found the shortest distance to a dead end.

Because the life sciences and cities happen to pose the same *kinds* of problems does not mean they are the *same* problems. The organizations of living protoplasm and the organizations of living people and enterprises cannot go under the same microscopes.

However, the tactics for understanding both are similar in the sense that both depend on the microscopic or detailed view, so to speak, rather than on the less detailed, naked-eye view suitable for viewing problems of simplicity or the remote telescopic view suitable for viewing problems of disorganized complexity.

In the life sciences, organized complexity is handled by identifying a specific factor or quantity—say an enzyme—and then painstakingly learning its intricate relationships and interconnections with other factors or quantities. All this is observed in terms of the behavior (not mere presence) of other specific (not generalized) factors or quantities. To be sure, the techniques of two-variable and disorganized-complexity analysis are used too, but only as subsidiary tactics.

In principle, these are much the same tactics as those that have to be used to understand and to help cities. In the case of understanding cities, I think the most important habits of thought are these:

1. To think about processes;

2. To work inductively, reasoning from particulars to the general, rather than the reverse;

3. To seek for "unaverage" clues involving very small quantities, which reveal the way larger and more "average" quantities are operating.

If you have gotten this far in this book, you do not need much explanation of these tactics. However, I shall sum them up, to bring out points otherwise left only as implications.

Why think about processes? Objects in cities—whether they are buildings, streets, parks, districts, landmarks, or anything else—can have radically differing effects, depending upon the circumstances and contexts in which they exist. Thus, for instance, almost nothing useful can be understood or can be done about improving city dwellings if these are considered in the abstract as "housing." City dwellings—either existing or potential—are *specific* and particularized buildings *always involved in differing, specific processes* such as unslumming, slumming, generation of diversity, self-destruction of diversity.*

This book has discussed cities, and their components almost entirely in the form of processes, because the subject matter dictates this. For cities, processes are of the essence. Furthermore, once one thinks about city processes, it follows that one *must* think of catalysts of these processes, and this too is of the essence.

The processes that occur in cities are not arcane, capable of being understood only by experts. They can be understood by almost anybody. Many ordinary people already understand them; they simply have not given these processes names, or considered that by understanding these ordinary arrangements of cause and effect, we can also direct them if we want to.

Why reason inductively? Because to reason, instead, from generalizations ultimately drives us into absurdities—as in the case of the Boston planner who knew (against all the real-life evidence he had) that the North End had to be a slum because the generalizations that make him an expert say it is.

This is an obvious pitfall because the generalizations on which the planner was depending are themselves so nonsensical. However, inductive reasoning is just as important for identifying, understanding and constructively using the forces and processes that actually are relevant to cities, and therefore are not nonsensical. I have generalized about these forces and processes consider-

*Because this is so, "housers," narrowly specializing in "housing" expertise, are a vocational absurdity. Such a profession makes sense only if it is assumed that "housing" per se has important generalized effects and qualities. It does not.

ably, but let no one be misled into believing that these generalizations can be used routinely to declare what the particulars, in this or that place, *ought* to mean. City processes in real life are too complex to be routine, too particularized for application as abstractions. They are always made up of interactions among unique combinations of particulars, and there is no substitute for knowing the particulars.

Inductive reasoning of this kind is, again, something that can be engaged in by ordinary, interested citizens, and again they have the advantage over planners. Planners have been trained and disciplined in *deductive* thinking, like the Boston planner who learned his lessons only too well. Possibly because of this bad training, planners frequently seem to be less well equipped intellectually for respecting and understanding particulars than ordinary people, untrained in expertise, who are attached to a neighborhood, accustomed to using it, and so are not accustomed to thinking of it in generalized or abstract fashion.

Why seek "unaverage" clues, involving small quantities? Comprehensive statistical studies, to be sure, can *sometimes* be useful abstracted measurements of the sizes, ranges, averages and medians of this and that. Gathered from time to time, statistics can tell too what has been happening to these figures. However, they tell almost nothing about how the quantities are working in systems of organized complexity.

To learn how things are working, we need pinpoint clues. For instance, all the statistical studies possible about the downtown of Brooklyn, N.Y., cannot tell us as much about the problem of that downtown and its cause as is

told in five short lines of type in a single newspaper advertisement. This advertisement, which is for Marboro, a chain of bookstores, gives the business hours of the chain's five stores. Three of them (one near Carnegie Hall in Manhattan, one near the Public Library and not far from Times Square, one in Greenwich Village) stay open until midnight. A fourth, close to Fifth Avenue and Fifty-ninth Street, stays open until 10 P.M. The fifth, in downtown Brooklyn, stays open until 8 P.M. Here is a management which keeps its stores open late, if there is business to be had. The advertisement tells us that Brooklyn's downtown is too dead by 8 P.M., as indeed it is. No surveys (and certainly no mindless, mechanical predictions projected forward in time from statistical surveys, a boondoggle that today frequently passes for "planning") can tell us anything so relevant to the composition and to the need of Brooklyn's downtown as this small, but specific and precisely accurate, clue to the *workings* of that downtown.

It takes large quantities of the "average" to produce the "unaverage" in cities. But as was pointed out in Chapter Seven, in the discussion on the generators of diversity, the mere presence of large quantities—whether people, uses, structures, jobs, parks, streets or anything else—does not guarantee much generation of city diversity. These quantities can be working as factors in inert, low-energy systems, merely maintaining themselves, if that. Or they can make up interacting, high-energy systems, producing by-products of the "unaverage."

The "unaverage" can be physical, as in the case of eye-catchers which are small elements in much larger, more "average" visual scenes. They can be economic, as in the case of one-of-a-kind stores, or cultural, as in the case of an unusual school or out-of the-ordinary theater. They can be social, as in the case of public characters, loitering places, or residents or users who are financially, vocationally, racially or culturally unaverage.

Quantities of the "unaverage," which are bound to be relatively small, are indispensable to vital cities. However, in the sense that I am speaking of them here, "unaverage" quantities are also important as analytical means—as clues. They are often the only announcers of the way various large quantities are behaving, or failing to behave, in combination with each other. As a rough analogy, we may think of quantitatively minute vitamins in protoplasmic systems, or trace elements in pasture plants. These things are necessary for proper functioning of the systems of which they are a part; however, their usefulness does not end there, because they can and do also serve as vital clues to *what is* happening in the systems of which they are a part.

This awareness of "unaverage" clues—or awareness of their lack—is, again, something any citizen can practice. City dwellers, indeed, are commonly great informal experts in precisely this subject. Ordinary people in cities have an awareness of "unaverage" quantities which is quite consonant with the importance of these relatively small quantities. And again, planners are the ones at the disadvantage. They have inevitably come to regard "unaverage" quantities as relatively inconsequential, because these are *statistically* inconsequential. They have been trained to discount what is most vital.

Now we must dig a little deeper into the bog of intellectual misconceptions about cities in which orthodox

reformers and planners have mired themselves (and the rest of us). Underlying the city planners' deep disrespect for their subject matter, underlying the jejune belief in the "dark and foreboding" irrationality or chaos of cities, lies a long-established misconception about the relationship of cities—and indeed of men—with the rest of nature.

Human beings are, of course, a part of nature, as much so as grizzly bears or bees or whales or sorghum cane. The cities of human beings are as natural, being a product of one form of nature, as are the colonies of prairie dogs or the beds of oysters. The botanist Edgar Anderson has written wittily and sensitively in *Landscape* magazine from time to time about cities as a form of nature. "Over much of the world," he comments, "man has been accepted as a city-loving creature." Nature watching, he points out, "is quite as easy in the city as in the country; all one has to do is accept Man as a part of Nature. Remember that as a specimen of *Homo sapiens* you are far and away most likely to find that species an effective guide to deeper understanding of natural history."

A curious but understandable thing happened in the eighteenth century. By then, the cities of Europeans had done well enough by them, mediating between them and many harsh aspects of nature, so that something became popularly possible which previously had been a rarity—sentimentalization of nature, or at any rate, sentimentalization of a rustic or a barbarian relationship with nature. Marie Antoinette playing milkmaid was an expression of this sentimentality on one plane. The romantic idea of the "noble savage" was an even sillier one, on another plane. So, in this country, was Jefferson's intellectual rejection of cities of free artisans and mechanics, and his dream of an ideal republic of self-reliant rural yeomen—a pathetic dream for a good and great man whose land was tilled by slaves.

In real life, barbarians (and peasants) are the least free of men—bound by tradition, ridden by caste, fettered by superstitions, riddled by suspicion and foreboding of whatever is strange. "City air makes free," was the medieval saying, when city air literally did make free the runaway serf. City air still makes free the runaways from company towns, from plantations, from factory-farms, from subsistence farms, from migrant picker routes, from mining villages, from one-class suburbs.

Owing to the mediation of cities, it became popularly possible to regard "nature" as benign, ennobling and pure, and by extension to regard "natural man" (take your pick of how "natural") as so too. Opposed to all this fictionalized purity, nobility and beneficence, cities, not being fictions, could be considered as seats of malignancy and—obviously—the enemies of nature. And once people begin looking at nature as if it were a nice big St. Bernard dog for the children, what could be more natural than the desire to bring this sentimental pet into the city too, so the city might get some nobility, purity and beneficence by association?

There are dangers in sentimentalizing nature. Most sentimental ideas imply, at bottom, a deep if unacknowledged disrespect. It is no accident that we Americans, probably the world's champion sentimentalizers about nature, are at one and the same time probably the world's most voracious and disrespectful destroyers of wild and rural countryside.

It is neither love for nature nor respect for nature that

leads to this schizophrenic attitude. Instead, it is a sentimental desire to toy, rather patronizingly, with some insipid, standardized, suburbanized shadow of nature—apparently in sheer disbelief that we and our cities, just by virtue of being, are a legitimate part of nature too, and involved with it in much deeper and more inescapable ways than grass trimming, sunbathing, and contemplative uplift. And so, each day, several thousand more acres of our countryside are eaten by the bulldozers, covered by pavement, dotted with suburbanites who have killed the thing they thought they came to find. Our irreplaceable heritage of Grade I agricultural land (a rare treasure of nature on this earth) is sacrificed for highways or supermarket parking lots as ruthlessly and unthinkingly as the trees in the woodlands are uprooted, the streams and rivers polluted and the air itself filled with the gasoline exhausts (products of eons of nature's manufacturing) required in this great national effort to cozy up with a fictionalized nature and flee the "unnaturalness" of the city.

The semisuburbanized and suburbanized messes we create in this way become despised by their own inhabitants tomorrow. These thin dispersions lack any reasonable degree of innate vitality, staying power, or inherent usefulness as settlements. Few of them, and these only the most expensive as a rule, hold their attraction much longer than a generation; then they begin to decay in the pattern of city gray areas. Indeed, an immense amount of today's city gray belts was yesterday's dispersion closer to "nature." Of the buildings on the thirty thousand acres of already blighted or already fast-blighting residential areas in northern New Jersey, for example, half are less than forty years old. Thirty years from now, we shall have accumulated new problems of blight and decay over acreages so immense that in comparison the present problems of the great cities' gray belts will look piddling. Nor, however destructive, is this something which happens accidentally or without the use of will. This is exactly what we, as a society, have willed to happen.

Nature, sentimentalized and considered as the antithesis of cities, is apparently assumed to consist of grass, fresh air and little else, and this ludicrous disrespect results in the devastation of nature even formally and publicly preserved in the form of a pet.

For example, up the Hudson River, north of New York City, is a state park at Croton Point, a place for picnicking, ballplaying and looking at the lordly (polluted) Hudson. At the Point itself is—or was—a geological curiosity: a stretch of beach about fifteen yards long where the blue-gray clay, glacially deposited there, and the action of the river currents and the sun combined to manufacture clay dogs. These are natural sculptures, compacted almost to the density of stone, and baked, and they are of a most curious variety, from breathtakingly subtle and simple curving forms to fantastic concoctions of more than Oriental splendor. There are only a few places in the entire world where clay dogs may be found.

Generations of New York City geology students, along with picnickers, tired ballplayers and delighted children, treasure hunted among the clay dogs and carried their favorites home. And always, the clay, the river and the sun made more, and more, and more, inexhaustibly, no two alike.

Occasionally through the years, having been introduced to the clay dogs long ago by a geology teacher, I would go back to treasure hunt among them. A few summers ago, my husband and I took our children to the Point so they might find some and also so they might see how they are made.

But we were a season behind improvers on nature. The slope of muddy clay that formed the little stretch of unique beach had been demolished. In its place was a rustic retaining wall and an extension of the park's lawns. (The park had been augmented—statistically.) Digging beneath the new lawn here and there—for we can desecrate the next man's desecrations as well as anyone—we found broken bits of clay dogs, mashed by the bulldozers, the last evidence of a natural process that may well have been halted here forever.

Who would prefer this vapid suburbanization to timeless wonders? What kind of park supervisor would permit such vandalism of nature? An all too familiar kind of mind is obviously at work here: a mind seeing only disorder where a most intricate and unique order exists; the same kind of mind that sees only disorder in the life of city streets, and itches to erase it, standardize it, suburbanize it.

The two responses are connected: Cities, as created or used by city-loving creatures are unrespected by such simple minds because they are not bland shadows of cities suburbanized. Other aspects of nature are equally unrespected because they are not bland shadows of nature suburbanized. Sentimentality about nature denatures everything it touches.

Big cities and countrysides can get along well together. Big cities need real countryside close by. And countryside—from man's point of view—needs big cities, with all their diverse opportunities and productivity, so human beings can be in a position to appreciate the rest of the natural world instead of to curse it.

Being human is itself difficult, and therefore all kinds of settlements (except dream cities) have problems. Big cities have difficulties in abundance, because they have people in abundance. But vital cities are not helpless to combat even the most difficult of problems. They are not passive victims of chains of circumstances, any more than they are the malignant opposite of nature.

Vital cities have marvelous innate abilities for understanding, communicating, contriving and inventing what is required to combat their difficulties. Perhaps the most striking example of this ability is the effect that big cities have had on disease. Cities were once the most helpless and devastated victims of disease, but they became great disease conquerors. All the apparatus of surgery, hygiene, microbiology, chemistry, telecommunications, public health measures, teaching and research hospitals, ambulances and the like, which people not only in cities but also outside them depend upon for the unending war against premature mortality, are fundamentally products of big cities and would be inconceivable without big cities. The surplus wealth, the productivity, the close-grained juxtaposition of talents that permit society to support advances such as these are themselves products of our organization into cities, and especially into big and dense cities.

It may be romantic to search for the salves of society's ills in slow-moving rustic surroundings, or among innocent, unspoiled provincials, if such exist, but it is a waste of time. Does anyone suppose that, in real life, answers to

any of the great questions that worry us today are going to come out of homogeneous settlements?

Dull, inert cities, it is true, do contain the seeds of their own destruction and little else. But lively, diverse, intense cities contain the seeds of their own regeneration, with energy enough to carry over for problems and needs outside themselves.

THE DEATH AND LIFE OF GREAT AMERICAN CITIES

JANE JACOBS

WITH A NEW FOREWORD BY THE AUTHOR

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