

# A Role for the Individual in City Planning

## MAIN STRUCTURE CONCEPT

*B. V. Doshi and Christopher Alexander*

*This is a revised version of a talk given at the International Design Conference, Aspen, Colorado, on June 28, 1962. India's shortage of materials, scant technical knowhow and unimaginably rapid growth present the problem of shaping the environment in a very special light. Christopher Alexander, mathematician and architect, working on problems of Indian village structure, and I, faced with similar problems in housing, laboratory design and urban design, have had many discussions on the subject. This article was written by us jointly as a result of these discussions.*

**B**Y THE 21st Century, scientists foresee that we will have control over extreme climatic conditions, widespread use of telecommunications and transportation facilities and the common use of electronic instruments. We will have medicines to reduce fatigue and increase our capacity to work and prolong our life span. Twenty-first Century man will have absolute control over sources of energy, sources of food, living processes, events on, around and beyond the earth. Indeed, the scientist's and technologist's image of the future contains nothing which *cannot* be controlled.

What image does the architect have to match this authority?

It is, perhaps, not surprising that the architect's vision is comparatively narrow since, unlike the economists and the scientists, he has no real power to change the world. In spite of his boasts, his buildings do not really alter the face of the earth. For him the shaping of the environment is merely a phrase.

Let us list a few areas where competence is required to deal with the problems of the environment—remembering that there is now almost no part of the earth in its natural condition: if you have done no more than hunt tigers in the jungle, the natural ecology of the area has been disturbed. Who is competent here to reestablish and control the balance? A biologist or an ecologist.

The chemist and physicist can manu-

facture entirely the materials by manipulating atoms and elementary particles to the required configurations; these new materials (and the bare fact that they can be made to meet almost any given conditions) have important implications for environmental problems. But the architect knows nothing about them.

In a planned economy, the biggest single influence on the environment is that of the chosen economic policy and plan. It is drafted by economists and politicians.

To reassure ourselves (if we can) about the architect's importance as a shaper of environment, let us look at those problems of environmental control which we regard as the architect's special province: indoor climate, human problems, sitings of buildings, building construction.

In a closed space we can control radiant and air temperature, humidity, ionization and air movement. The expert in these matters is a heating engineer, not an architect.

**I**N A CITY we are forced to modify the social environment of the inhabitants because, whether we like it or not, physical planning has social repercussions. Yet the experts in this matter are anthropologists and sociologists.

Since the effect any indoor space—a living-room or a café or an office—has on people cannot be ignored, we must also, as architects, try to control the

psychological conditions created by the micro-environment. But if we really want to study their effects, we will more likely consult the psychologists who are working on confinement stress in a space capsule.

The economic effects of placing a building in one place rather than another, and its future consequences for the city, are not known to the architect. The economic planner is the expert here.

And even in the simplest environmental problem of all, that of building dwellings, the builder rather than the architect reigns supreme. Of all the surface construction in the five boroughs of New York City, architects may possibly be responsible for 1/10th of 1%. And if anybody can make any real change in the physical organization of these boroughs it will be a builder's lawyer who can alter patterns of land tenure and responsibility, not the architect.

Nor do most of us really require the services of an architect except in so far as fashion tells us to. Actually we can live anywhere, because we can adapt ourselves to almost any condition. A barn will be happily used by one man as a house, by another as a garage, by another as an office or a theatre. This adaptability of man makes much of modern architectural emphasis on precise function inappropriate. It is pointless, for example, to waste energy designing the most functional staircase

(as one might the most functional airplane wing) when people, because of their innate ability to adapt, can use any staircase which gets them upstairs.

In fact, even architects don't believe that the principles of modern architecture are actually essential to modern life; many of them prefer to live in old houses.

Of all the design problems in the man-made environment, the only one where the architect is likely to be consulted is that of monuments.

So we are led to the strange conclusion that the architect at present plays almost no useful part in the creation of the environment.

**Y**ET, IN spite of this, architects still talk complacently of designing entire cities, and occasionally, as in the case of Brasilia or Chandigarh, actually manage to implement their designs. But an idea like Brasilia only demonstrates the megalomania of a designer who thinks he knows enough to prescribe the environment in detail for millions of people, though he may not be competent to understand the full range of the functions of the city. What is more important, people must be allowed whenever possible to control their own immediate surroundings. More important still, perhaps, the totally designed city is often so dogmatic, so rigid, that it has no chance to grow except by outward sprawl.

Yet somehow the architect must be able to make his contribution. Though the specialists rather than the architects are now making the most startling changes in the environment, as matters stand the piecemeal contributions of the specialists add up to little. Working on their own, each contributes a good deal to the new environment, but all these separate contributions have not achieved even that degree of coherence which would allow us to combine them under one heading. The word environment, after all, suggests something organized, but where is coherence, organization to come from? Who among all these experts is to provide it?

By way of answer, we may broadly define the organization of the environ-

ment as that aspect of its pattern which is most apparent. If, for example, we make a diagram of New York at such scale that it is only one inch across we shall be able to pack into it only the most vital information about the functional and physical organization of the city. If we make a larger diagram there will be room on it for more information; but some of this information will be less conspicuous in the organization. If we make further diagrams, getting larger and larger, we shall be able to include more and more detail which is less and still less conspicuous in the functional and physical organization of the whole.

**O**NE WAY of describing New York on a postage stamp is to draw the grid. A larger diagram will begin to show the main structure, the contents of individual blocks. If we call the grid the main structure, the contents of the blocks are the filler.

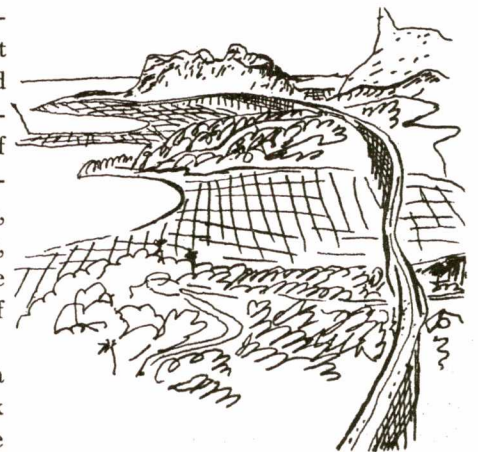
If, instead of drawing the grid, we draw the centers of most intense activity, we shall get a different diagram, consisting of blobs at Times Square, Wall Street, Rockefeller Center, Greenwich Village, Grand Central and so on. If these centers are in this case the main structure, the subsidiary restaurants and nightclubs, taxi-stands and subway stations, etc., provide the filler.

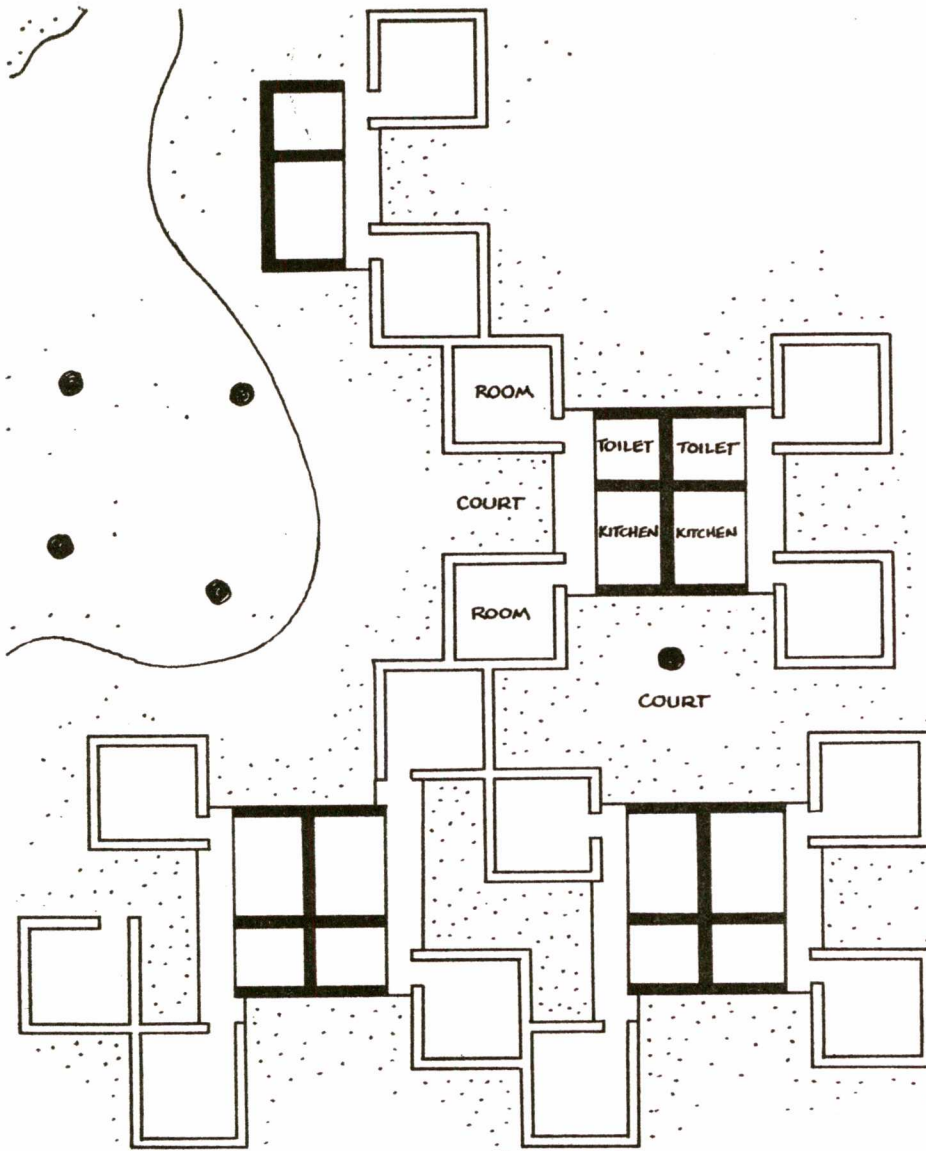
Or again, if we draw the various functional zones like the West Side docks, the trucking zone behind the docks and around Penn station, the commercial stores on Sixth and Seventh Avenues, the luxury stores on Fifth and Madison related to the luxury residential neighborhoods close by, Harlem uptown, and the racially mixed West Side separating it from Midtown, and so on, we shall get a still different picture of the structure of New York. If we regard these zones as main structure, then the filler consists of cinemas, parking lots, the West Side highway, Central Park Zoo, etc., which have grown as reactions to this pattern of zones.

But the real problems of finding a main structure for a city like New York is not to pick just *one* of these three

*On opposite page:  
a fragment of a plan of a village composed  
of main structures: service cores and roofs;  
the remaining elements to be built by  
the occupants. B. V. Doshi, architect.*

*Le Corbusier's proposal for Rio de Janeiro  
which like that for Algiers, combines traffic,  
work and housing in a single unit. The  
road and load-bearing elements  
are the "main structure."*





main structures but to fuse *all* of them in a single main structure, one which would combine all the major functions contributing to the overall organization of the city's environment.

Le Corbusier, in his plan for Algiers, had the idea of combining traffic, work and housing in a single linear thread. Within this complex, Le Corbusier envisaged every type of activity. The road and the load-bearing elements constitute the main structure. As filler, his drawings show Baroque, Moorish and modern houses jumbled together according to the whim of the inhabitants, but always within the discipline of the main structure. The Ginza high-

way, actually built in Tokyo, is a diluted version of this concept.

Tange, in his plan for Tokyo, states that the only rigidly defined part of the plan is to be that which caters to the mass or collective scale: communication, meeting, shopping, recreation. The *individual scale*, required by dwellings and places of work, he regards as changeable; and he does not therefore bother to define it. Tange's mass scale is the main structure; the human scale provides the filler.

**A**T A smaller scale, we find similar examples. Kikutake's sketch for a residential tower is based on a main structure which provides load-bearing

### Can a Better City Spring from the Architect's Wand?

Two major obstacles lie directly in the path of William Pereira [and his plan to build a city of 100,000 with a university with 27,500 students on the Irvine ranch south of Los Angeles]. One is to foresee with accuracy the racing course of change. What architect in 1947 would have correctly anticipated: (1) The sudden arrival of television and the way it modified family life. (2) The popularity of larger families. (3) The evolution of home, for many people, into a launching pad for weekends in campers and trailers, for water skiing, or for other distant recreation?

Is human foresight better today than in '47?

The other problem is to plan a city that will be functionally adapted to the work which will be done there. Pereira can study Universities from historic Europe to modern U.S.A. and he may correctly foresee how the University of California at Irvine should be served.

But again, go back to 1947 and look at a specimen University, Stanford. Could any architect have foreseen the sudden marriage of industry and education which has put the great Industrial Park adjacent to the campus? Was the growth of the immense scientific research facilities forecastable?

What makes anyone so sure that the shape of the University of tomorrow is now as predictable as the form of the oak tree that will grow from the acorn?

By planning on the basis of assumptions which time may prove wrong, the all-at-once city has a chance to become the greatest goof of all time. Evolutionary cities, like ours, don't have that chance because they keep correcting their tendencies as they grow from mere villages into cities.

From an editorial in The Redlands (Cal.) Daily Facts, Sept. 7, 1963.

and service elements; but he assumes the individual dwelling units would then be provided as fillers by the tenants.

Another experiment along these lines which has been realized is the Hong Kong refugee accommodation. The city has built six-story blocks with nothing but floors, staircases and services. The refugees have to construct their own enclosures on the "artificial ground" provided.

We ourselves are designing a very basic main structure, consisting of service cores and roofs, for village cowherds in India. The rest of the structure will be filled in by the cowherds themselves. They will use materials like mud-wall and thatch in the traditional way; and, since such filler is cheap and expendable, it will permit changes and improvements to be made as the income of the tenants rises.

The relation between main structure and filler has several characteristics. (1) The main structure is always more permanent than its filler. (2) The functions performed by the main structure are usually more exacting than the

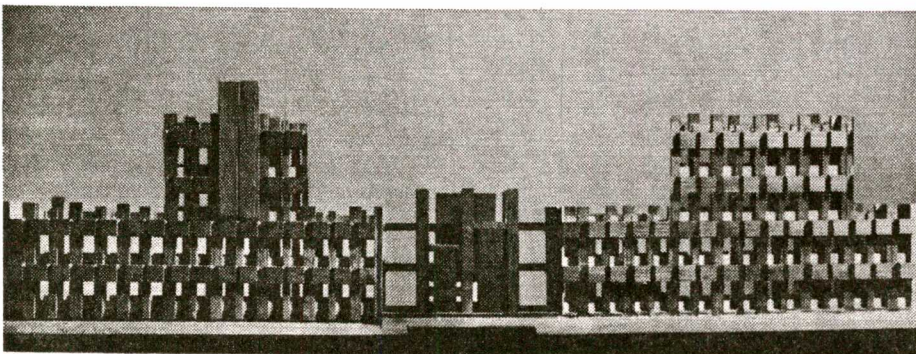
functions of the filler. (3) In many cases, the development of the filler can be left to the fluctuations of the market and to the whims and special desires of individuals.

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THE EXAMPLES we have given, all of them recent works, suggest that some architects are now exploring an approach to environmental design more modest than the usual ambitious attempts to prescribe the form of the environment in full and in every detail, as, for instance, in Brasilia. They suggest the possibility of concentrating the essential functions of the city in a few major structural components (over which the architects and planners *do* have adequate control) and leaving the rest of the city to grow as it will in between. The architects mentioned have all designed the main structure and have left the filler to itself. In this way, they have made a most welcome contribution to the solution of some of the problems of urban environment, a contribution which the all-powerful specialists cannot make. *The architects have specified the overall organization of the*

*environment but have left it to the individual to control and construct his immediate surroundings.*

If we can develop this trend towards the specific design of main structures only, it will be of enormous human advantage. Under present-day living conditions, the city-dweller's personal possessions are his only outlet for self-expression. Mass-produced, mass-design-regimented houses and offices stunt his spiritual and esthetic development and eventually destroy his mental wellbeing. His attitude toward his environment becomes increasingly impersonal and uninterested. There is nothing in the world around him to offer him the chance for personal identification or to arouse in him any sense of belonging. If designers concentrate on the main structure only, the individual filler units, whether they are dwellings, offices, cafés or gardens, will be able to find their own form at the hands of the people who inhabit them. Perhaps we can then again learn the freedom and sense of belonging to the things around us that we once had.



*Gujarat University Laboratory,  
designed to grow and change  
around a permanent core.  
B. V. Doshi, Architect*

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