YONA FRIEDMAN

BIOSPHERE
THE GLOBAL INFRASTRUCTURE

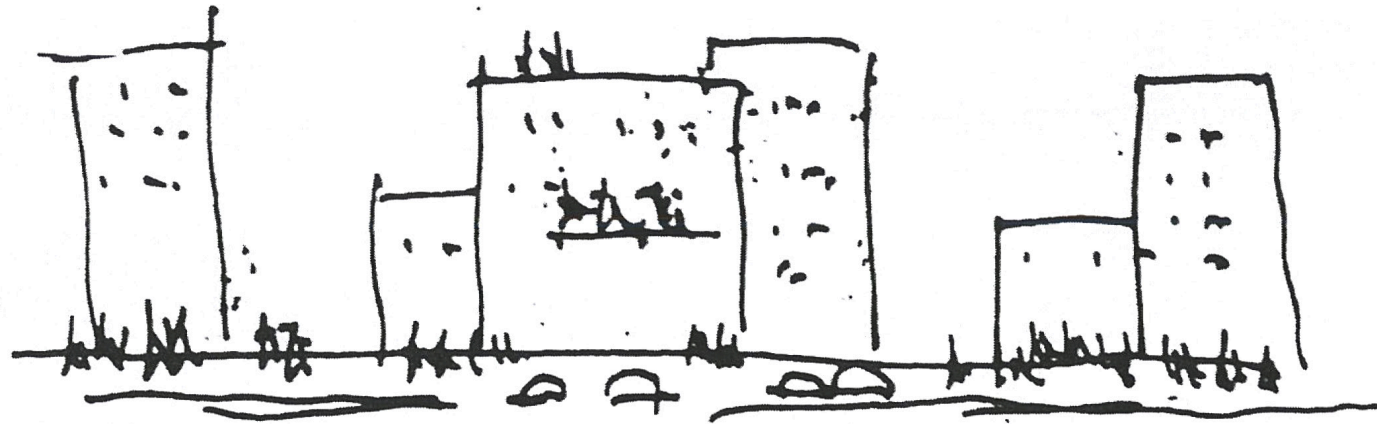INFRASTRUCTURE IS A TECHNICAL DEVICE
SERVING HIGH DENSITY SETTLEMENTS. WHERE
COLLECTIVITY IMPOSES "PROXIMITY"

Less Hardware: The Software City
Yona Friedman

In the late fifties, I started with the idea I called 'Mobile Architecture.' It was about the importance for the inhabitant, the user, to design his living premises himself. That program involved a technique making all parts of these premises—walls, ceilings, floors—easy to move into whatever position, as easy as pushing around pieces of furniture.

The technical solution I proposed I called the 'Ville Spatiale,' consisting of a space-frame skeleton, the "infrastructure," in the voids of which were inserted the living premises. That skeleton itself was supported by "staircase pillars" high above ground level. This technical concept admitted free improvisation by the inhabitants, replacing traditional planning with a "trial and error" process, both for architecture and for urban design.

The key for the 'Ville Spatiale' was the "infrastructure," containing both engineering security of roofs and floors and also the supply networks: electric power, water, phone network, and sewage.
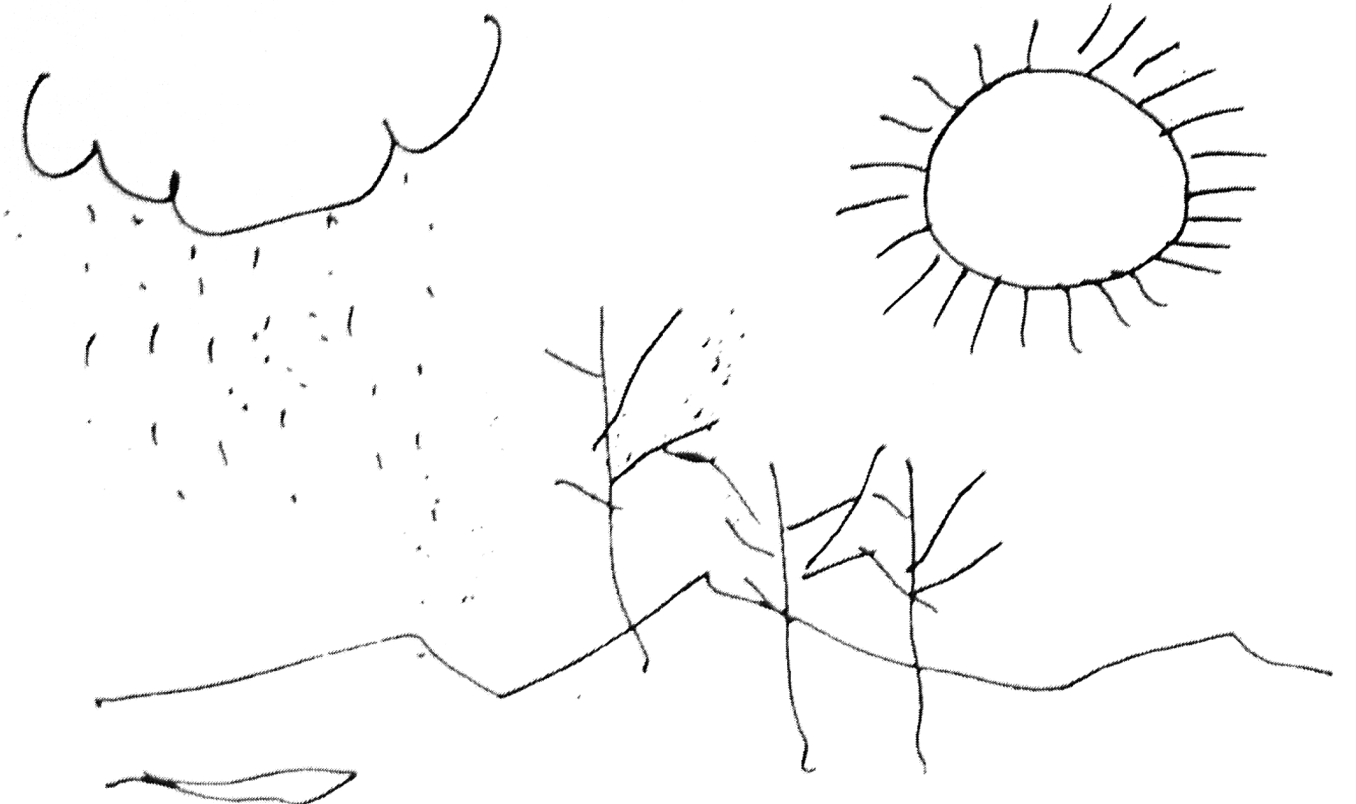
In the fifties, the scheme seemed perfect.
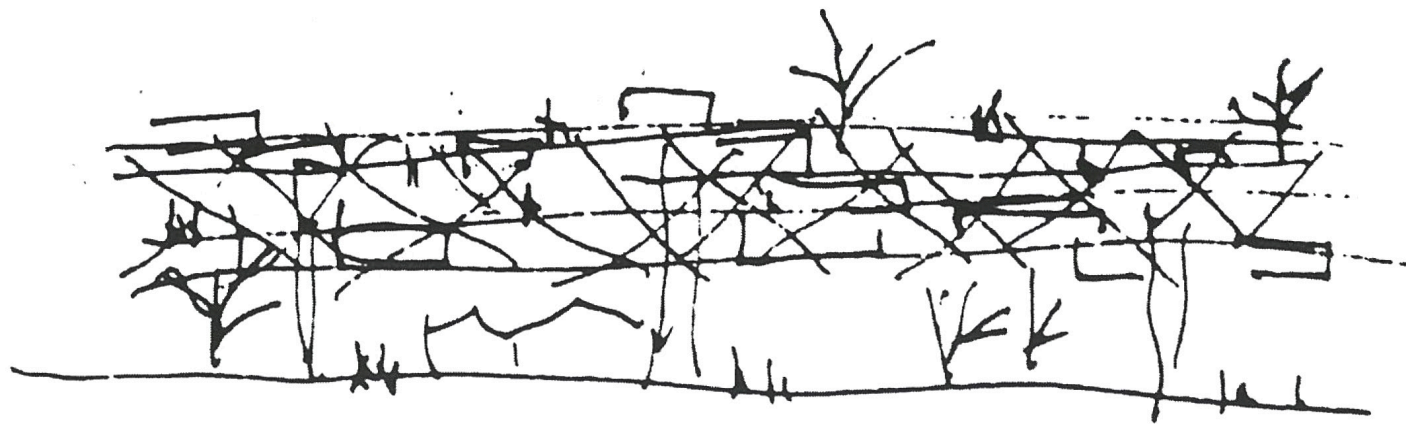
THE "VILLE SPATIALE" IS A MATERIAL
INFRASTRUCTURE, ACCOMMODATING
USER'S IMPROVISATION WITH LOW GROUND IMPACT

THIS IS A NATURAL CLOUD

THE WATER NETWORK CAN BE SUBSTITUTED
CAPTING HIMSELF THE RAINWATER

AIR, SUN, RAIN IS PLENTY
IN ALL INHABITABLE REGIONS

CITIES ARE NOT ANYMORE NECESSARILY CONDENSED
BECAUSE OF NETWORKS, SOCIAL OR TECHNICAL



REDUCING URBAN CONDENSATION
WILL REDUCE TRAFFIC CONGESTION



TODAY, MATERIAL INFRASTRUCTURE
CAN BE SUBSTITUTED BY "CLOUDS"
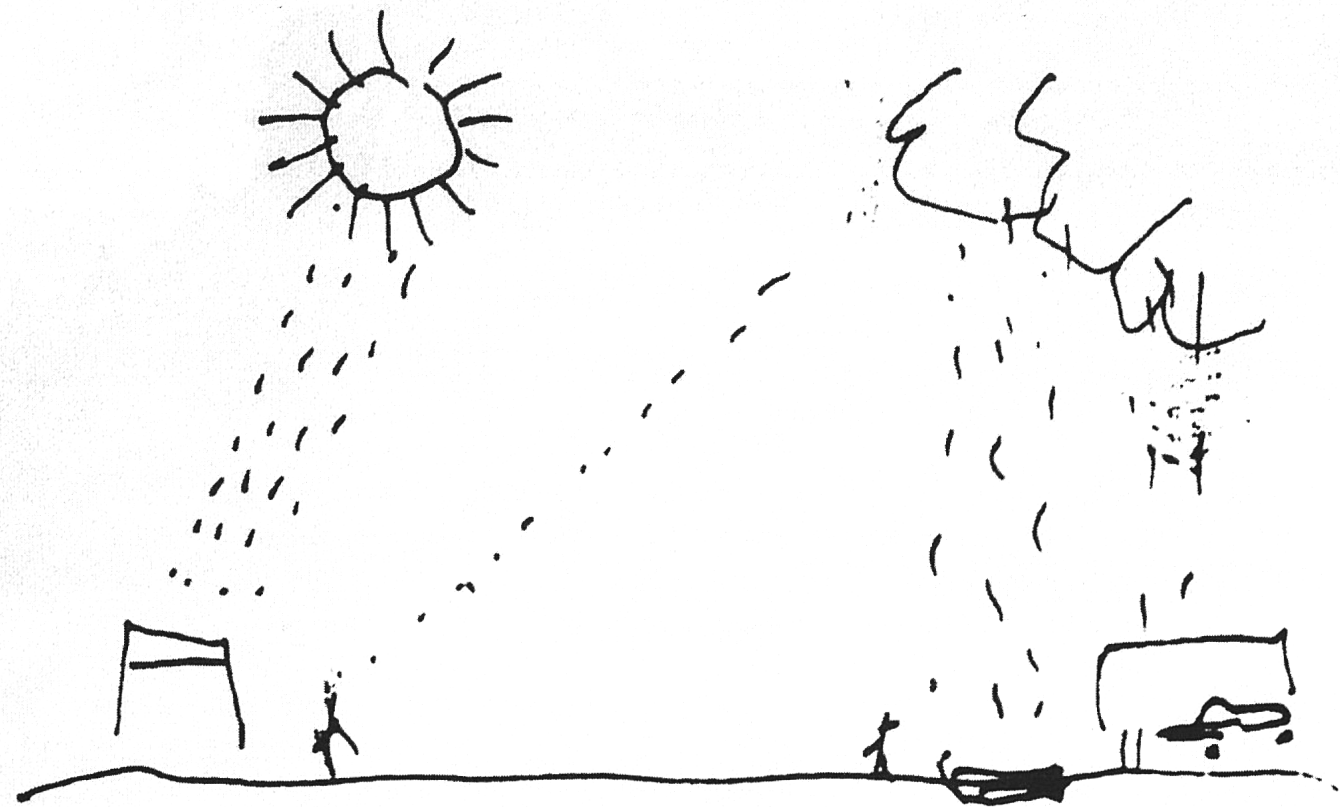DISPENSING "PROXIMITY"

It was later, in the nineties, that new technologies emerged: digital technologies and new kinds of batteries. It started, in the praxis, with cellular phones, with solar panels, with LED lights. Material networks started to be replaced by immaterial ones.

"Infrastructure" could become largely immaterial. I call the resulting new device the "cloud infrastructure."

"Cloud infrastructure" consisted of immaterial "spheres" enveloping our planet completely: internet, sunshine, rain clouds. Each of these "spheres" can be "tapped" by small "household objects": computers, solar panels, individual water collectors, individual sewage disposal.

The large-scale "hardware" infrastructure could be transformed, by implementing the new technologies, into large-scale "software" infrastructure. Individual premises could be reduced into a small amount of small-sized "household" equipment, serving for communication, for the energy source, for the water supply, for sewage, and ultimately, for the "house."

"House" and "infrastructure" can become, for the user, kinds of sophisticated "furniture," rather inexpensive.

"CLOUD" SERVICES ARE AVAILABLE
EVERYWHERE
HOMES CAN BECOME AUTONOMOUS,
SOCIALLY AND TECHNICALLY



HI!

WE ARE DISPERSED

BUT NEAR TO EACH OTHER

IT COULD ALSO LEAD
TO EMERGING NEW SOCIAL PATTERNS

In the early twenty-first century (I think about 2006), I tried to work on the idea of the "house" becoming "furniture." My project 'Meuble Plus' consisted of using small "cabins" enclosing a piece of furniture "plus" the space necessary to use it: a table with space around it, a bed with space around it, kitchen equipment, bathroom equipment, etc., with the space necessary to use it.

A 'Meuble Plus' cabin, of about 8–10 m³, as realized in prototype, the box itself made with the "space-chain" technique (a cube built by joining six steel circles), had a weight, equipment included, of about 30–40 kg—a weight within "furniture range" that could be easy to "push around." The cost of the box (without equipment) was about €150.
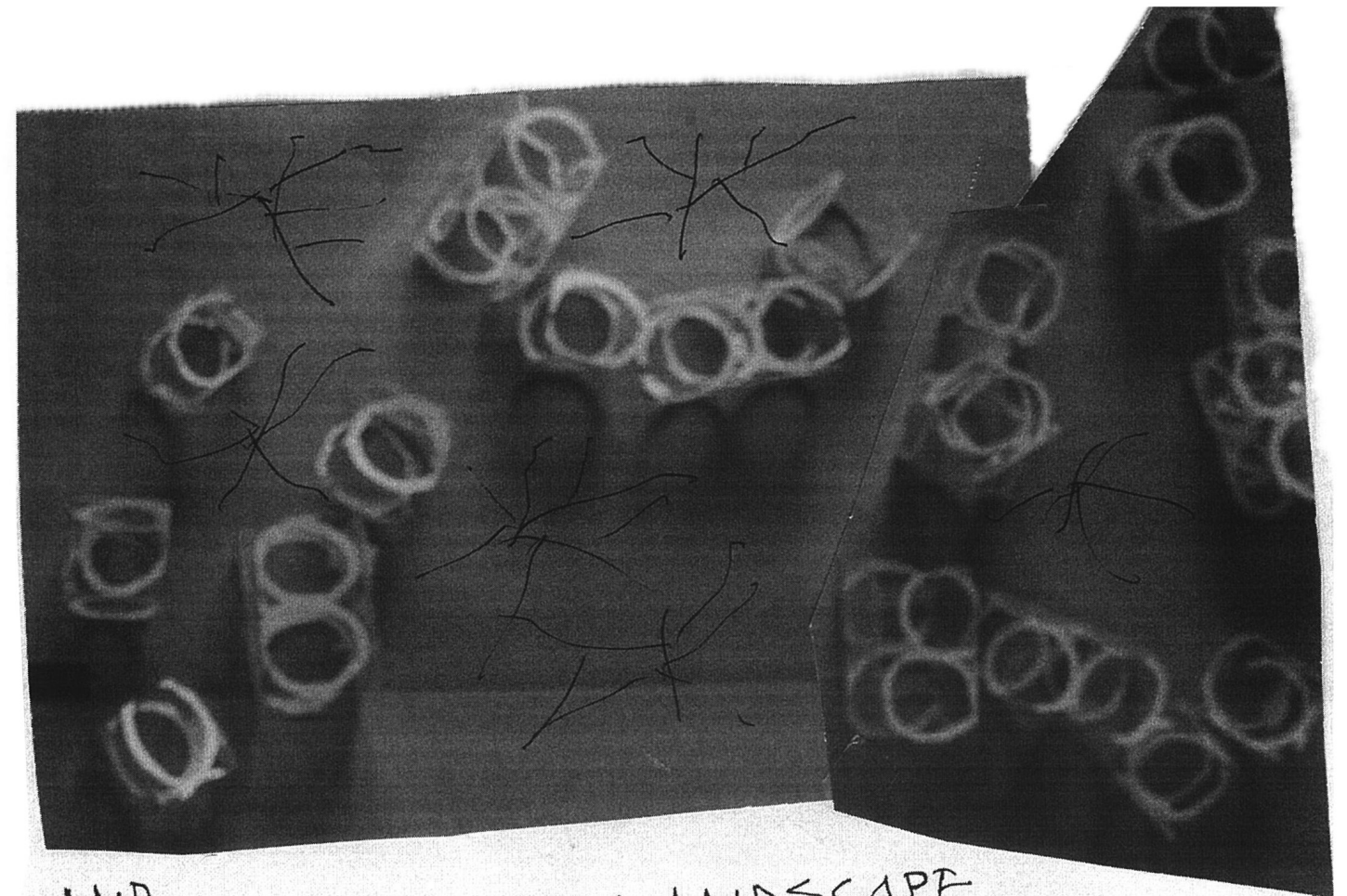
Six to eight boxes can be assembled into a small house that can be disposed of at will and changed into another disposition at any time.

'Mobile Architecture,' in our time, consists of an immaterial infrastructure and moveable furniture-like "household" equipment at very modest costs.
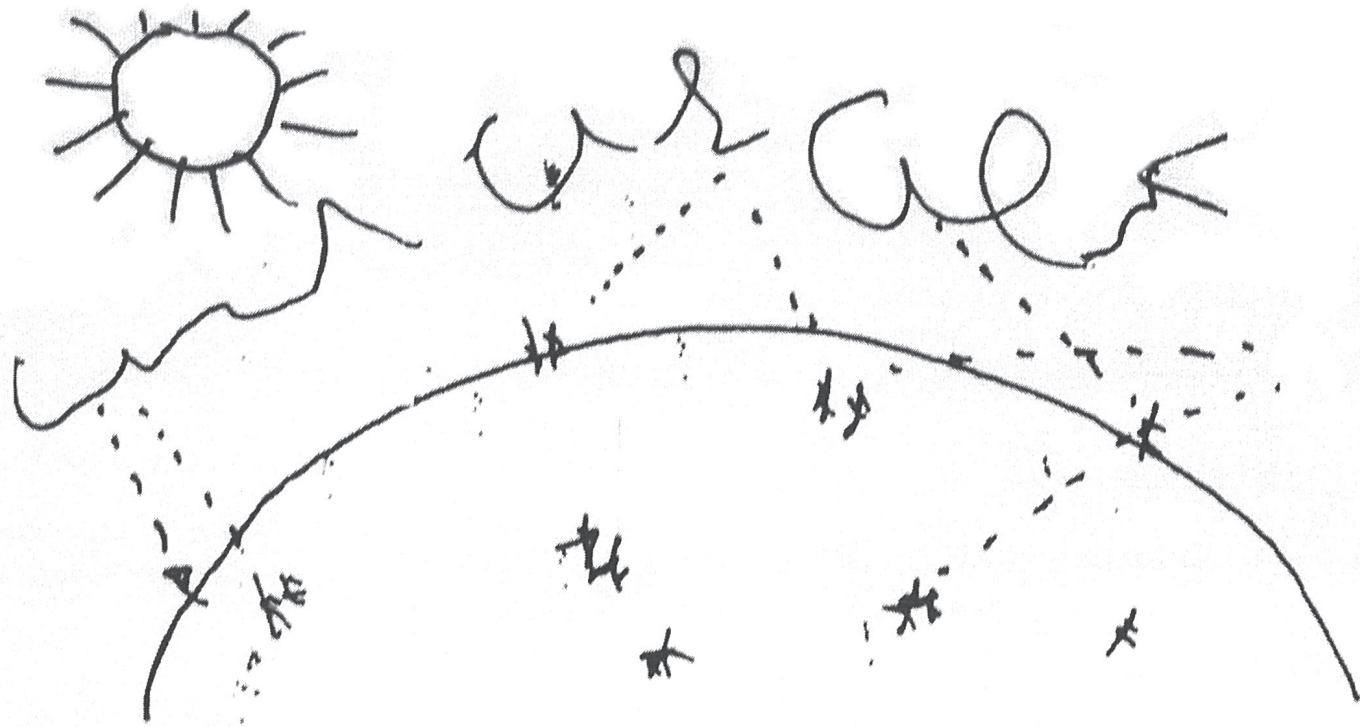
Twenty-first–century 'Mobile Architecture' might trigger new concepts of "city," of urban life. It would be even more appropriate to say that the new emerging urban lifestyle would make architecture more "mobile."



AND
TO NEW URBAN LANDSCAPE

## ANY AREA ON EARTH'S SURFACE CAN BECOME INHABITABLE WITHOUT INTRUDING ON ENVIRONMENT

"Cloud infrastructure" dispenses with high habitation density. Proximity to your neighbor can become a hundred meters or more. You can have a small garden, a tree.

The environmental effect of the 'Dispersed City' can be enormous. It reduces artificial intervention to a minimum. Artificial intervention is replaced by software.

"Software City" might be the human settlement of the future.

An important footnote: "Software City" might be an unavoidable step towards recycling and reducing pollution.
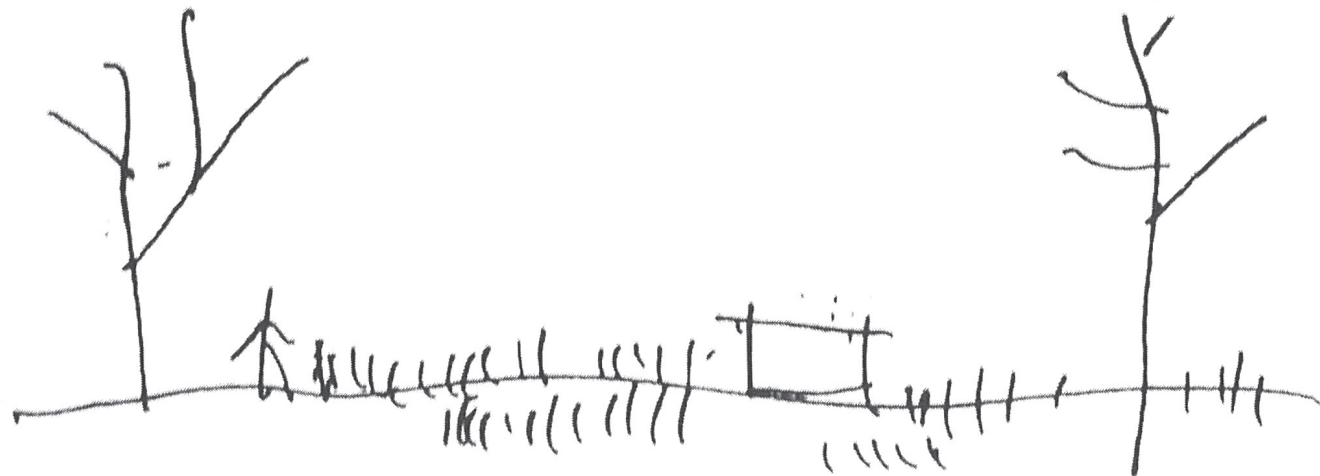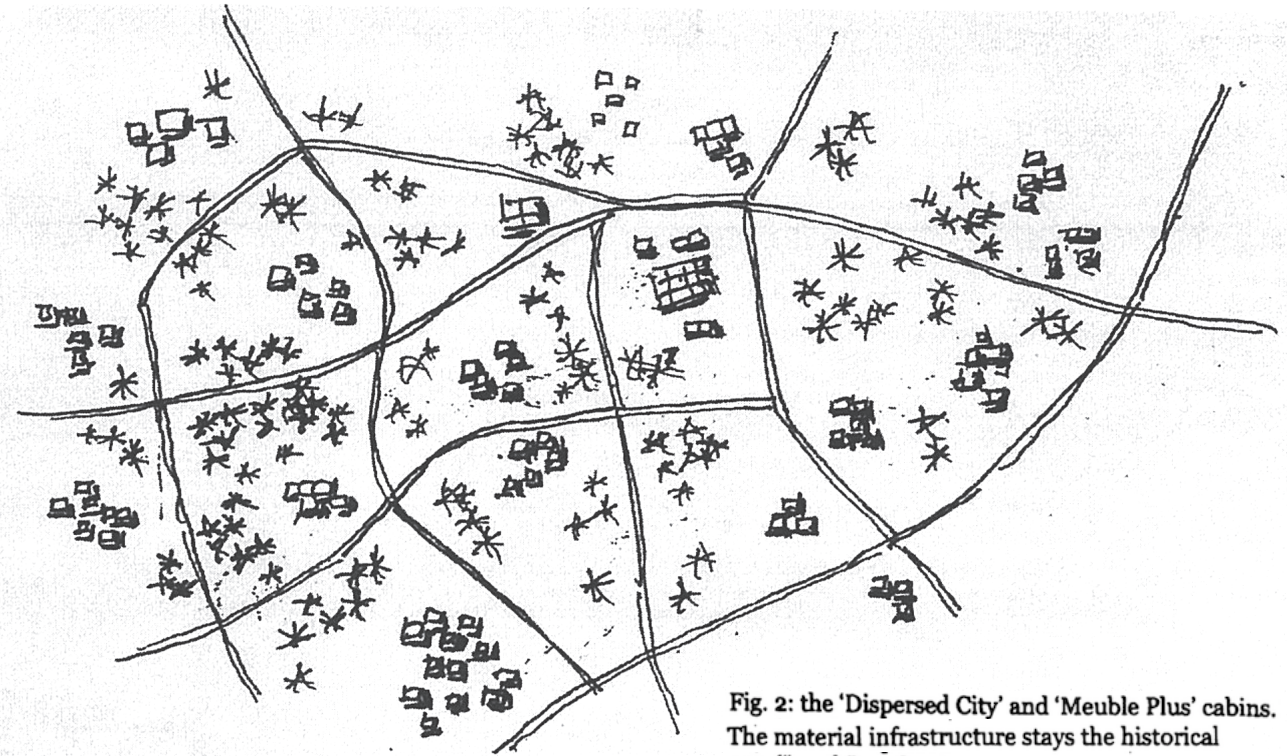


## AND FOOD POLICY



Fig. 2: the 'Dispersed City' and 'Meuble Plus' cabins. The material infrastructure stays the historical one ("earth" surface).

I call that emerging city the 'Dispersed City.'

Let us examine that new concept in more detail.

One of the most important motives for urban agglomeration was historically the city being the marketplace, attracting producers and consumers. In modern terms, it means that jobs are concentrated in the city.

"Cloud infrastructure" already started to change that situation. About 80% of jobs, white-collar and blue-collar jobs, can be performed "from home." Operating through computers does not make necessary workers' physical presence at condensed workplaces, like office towers or factories.

Condensing activities into crowded centers both means security risks (think about the World Trade Center and other mass killings) and provokes traffic jams. Centers provoke congestion.

Continuing to observe the labor market, many jobs are disappearing due to automation. What is emerging is a new field: personal care and assistance.

Personal care, as an industry, is easier to perform in smaller settlements, with lower habitation density. It could work better in a 'Dispersed City.'

Social contact by random meeting in a forum or a market is already disappearing. Social contact is enhanced through the cellular phone. People meet anywhere, on personal appointment.

The important function of retail is also more and more functioning through the internet, with fast delivery anywhere.

"Cloud infrastructure" is already working. In California, an area with high risk of earthquakes, many homes have solar panel installation and water reserves, as existing networks can be disrupted even by minor quakes.
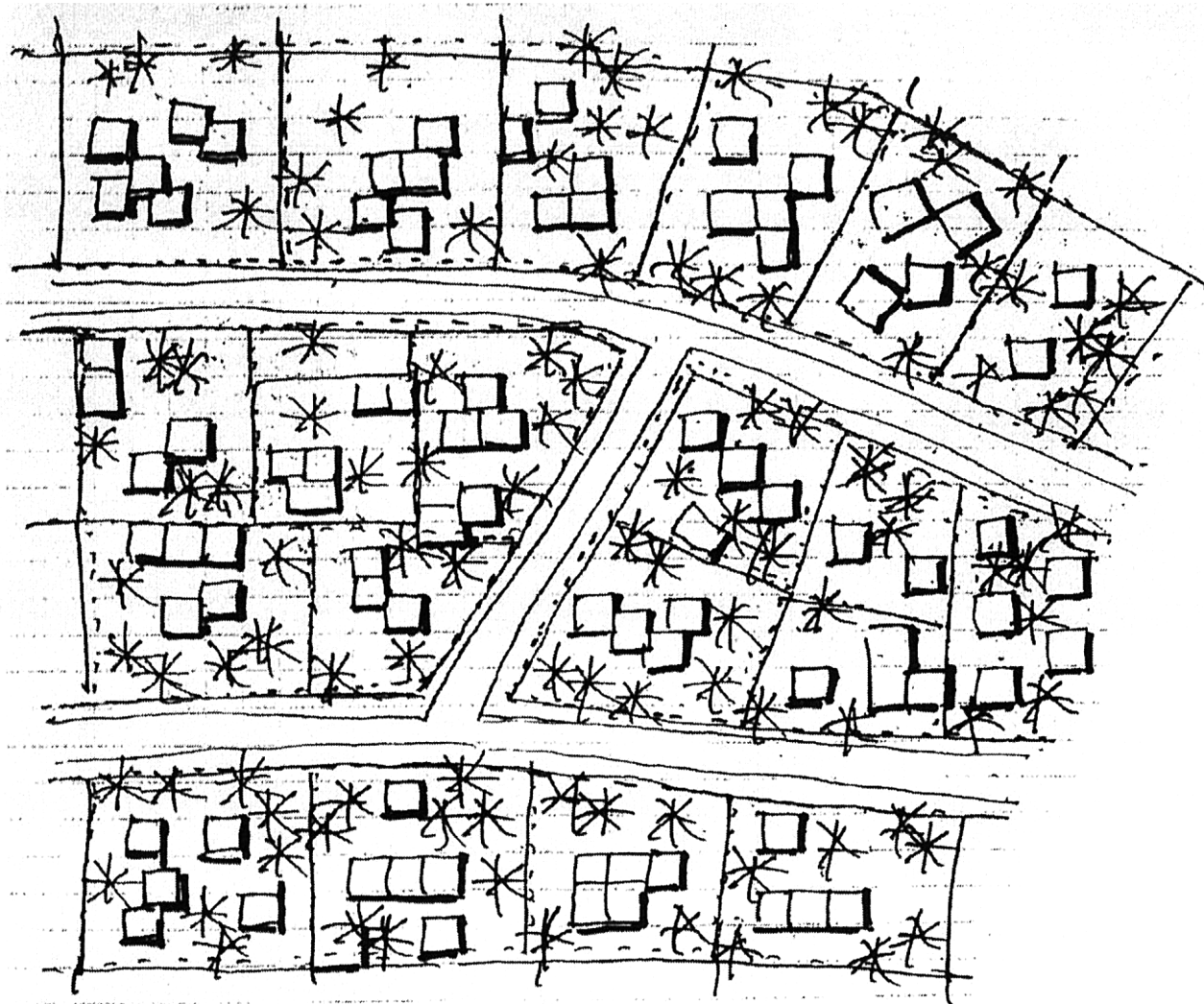
A SETTLEMENT WITH "MEUBLE PLUS" CABINS

But besides those technical effects, the 'Dispersed City' might induce heavy social transformations.

The first one is what I called in the seventies "Urban Villages": communicating groups of "neighbors." Urban villages already exist in large cities today: in Paris, in New York, in Los Angeles. Their focal point might be a café, a drugstore.

The second change that the 'Dispersed City' can induce is a transformation of the "realty market," that of "land value." Today, there is an enormous value difference between land in the large city center and that in the countryside.

With the emergence of the 'Dispersed City,' of the "cloud infrastructure," land value might shift up and down: centers losing value, country values going up. The consequences for the global economy might be important. "Cloud infrastructure" has already begun to exist, and it is implicitly global.

Perhaps "land property" might become transformed with "mobility" (like the 'Meuble Plus' project) into use of limited duration, a sort of "leasing." The freehold system existing in England can serve as an example.
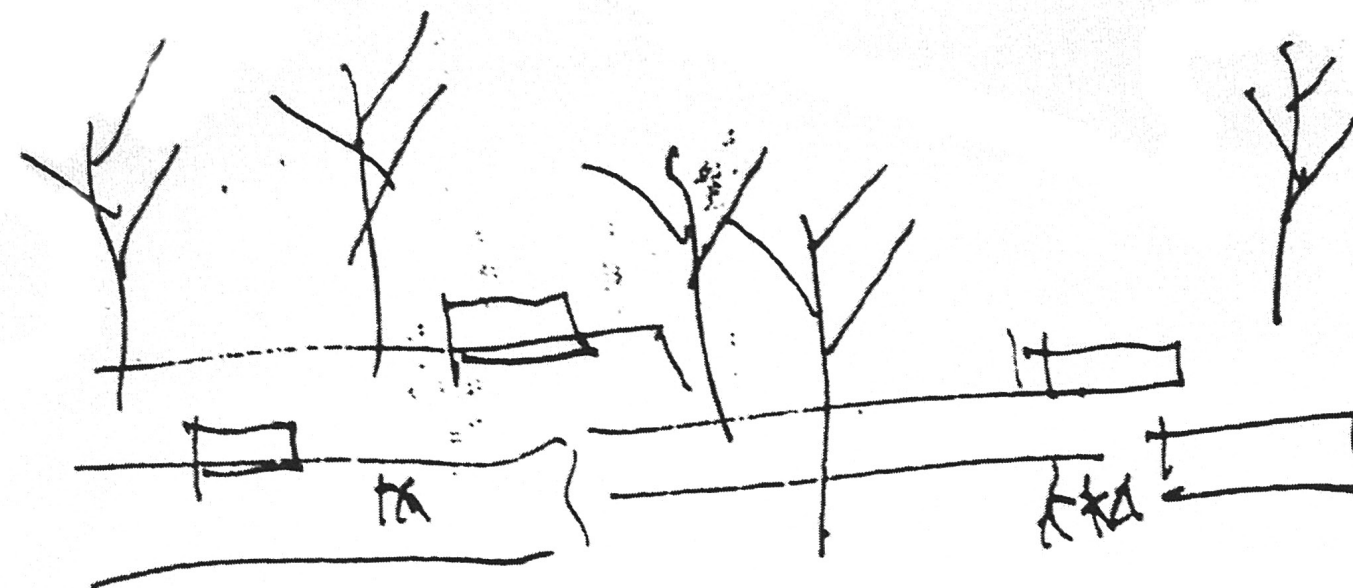


"CLOUD" INFRASTRUCTURE CAN HAVE COROLLARY EFFECTS ON LAND POLICY

Commuting would persist in the 'Dispersed City,' a high-speed service at a continental scale. Today, Paris and London are mutually suburbs of each other. Today, Beijing and Shanghai are three hours apart.

"Cloud infrastructure" and 'Meuble Plus' architecture can lead to an absurdity disappearing. I want to re-examine our idea about the value of a "house."

Let us think about buying any commonplace merchandise: food, household equipment, clothing, any kind of gadget.

The merchandise is delivered to you "packed." Wrapped in paper, in a cardboard box, enveloped into a plastic bag, etc.

Your bill indicates the price of the merchandise, but eventually also that of the pack. It seems evident to each of us that the price of the merchandise is a hundredfold that of the packing.

A "house" is used by using all the equipment it contains, your personal belongings. But the price of the house, the "packing" of all it contains, is often a hundredfold that of its content.

The "packing" is more expensive than the goods packed.

That could be logical considering building techniques of the past. But with lightweight techniques, like for example 'Meuble Plus,' or "space-chain" techniques in general, the price of the "packing" becomes proportional to that of the content.

The inhabited house becomes furniture, a "household object," connected to the global "cloud infrastructure."