A Selection of Architectural Manifestos

HMS 497A: Thesis Writing
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The Principle of Cladding

Neue Freie Presse, *September 4, 1898*

Even if all materials are of equal value to the artist, they are not equally suited to all his purposes. The requisite durability, the necessary construction often demand materials that are not in harmony with the true purpose of the building. The architect's general task is to provide a warm and livable space. Carpets are warm and livable. He decides for this reason to spread out one carpet on the floor and to hang up four to form the four walls. But you cannot build a house out of carpets. Both the carpet on the floor and the tapestry on the wall require a structural frame to hold them in the correct place. To invent this frame is the architect's second task.

This is the correct and logical path to be followed in architecture. It was in this sequence that mankind learned how to build. In the beginning was cladding.[1] Man sought shelter from inclement weather and protection and warmth while he slept. He sought to cover himself. The covering is the oldest architectural detail. Originally it was made out of animal skins or textile products. This meaning of the word is still known today in the Germanic languages.[2] Then the covering had to be put up somewhere if it was to afford enough shelter to a family! Thus the walls were added, which at the same time provided protection on the sides. In this way the idea of architecture developed in the minds of mankind and individual men.

There are architects who do things differently. Their imaginations create not spaces but sections of walls. That which is left over around the walls then forms the rooms. And for these rooms some kind of cladding is subsequently chosen, whatever seems fitting to the architect.

But the artist, the *architect*, first senses the effect that he intends to realize and sees the rooms he wants to create in his mind's eye. He senses the effect that he wishes to exert upon the spectator: fear and horror if it is a dungeon, reverence if a church, respect for the power of the state if a government palace, piety if a tomb, homeyness if a residence, gaiety if a tavern. These effects are produced by both the material and the form of the space.

Every material possesses its own language of forms, and none may lay claim for itself to the forms of another material. For forms have been constituted out of the applicability and the methods of production of materials. They have come into being with and through materials. No material permits an encroachment into its own circle of forms. Whoever dares to make such an encroachment notwithstanding this is branded by the world a counterfeiter. Art, however, has nothing to do with counterfeiting or lying. Her paths are full of thorns, but they are pure.

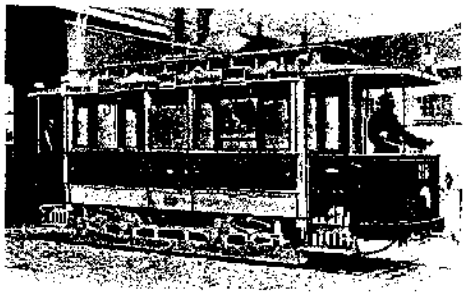
One could cast St. Stefan's Tower in cement and erect it somewhere, but then it would not be a work of art. And what goes for the Stefan's Tower also goes for the Pitti Palace; and what goes for the Pitti Palace goes for the Farnese Palace. And with this building we have arrived in the midst of our own Ringstrasse architecture. It was a sad time for art, a sad time for those few artists among the architects of that time who were forced to prostitute their art for the sake of the masses. It was granted to only a small number consistently to find contractors broad-minded enough to let the artist have his way. Schmidt was probably the luckiest. After him came Hansen, who, when he was having a rough time, sought solace in terra-cotta buildings. Poor Ferstel must have endured terrible agonies when they forced him at the last minute to nail an entire section of facade in poured cement onto his University.[3] The remaining architects of this period—

with a few exceptions—knew how to keep themselves free of nightmarish agonies like these.

Is it any different now? Allow me to answer this question. Imitation and surrogate art still dominate architecture. Yes, more than ever. In recent years people have even appeared who have lent themselves to defending this tendency (one person, of course, did so anonymously, since the issue did not seem clear-cut enough to him); so that the surrogate architect no longer need stand diminutively on the sidelines. Nowadays one nails the structure to the facade with aplomb and hangs the "keystone" under the main molding with artistic authority. But come hither, you heralds of imitation, you makers of stenciled inlays, of botch-up-your-home windows and papier-mâché tankards! There is a new spring awakening for you in Vienna! The earth is freshly fertilized!

But is the living space that has been constructed entirely of rugs not an imitation? The walls are not really built out of carpets! Certainly not. But these carpets are meant only to be carpets and not building stones. They were never meant to be taken as such, to imitate them in form or color, but rather to reveal clearly their own meaning as a cladding for the wall surface. They fulfill their purpose according to the principles of cladding.

As I already mentioned at the outset, cladding is older even than structure. The reasons for cladding things are numerous. At times it is a protection against bad weather—oil-base paint, for example, on wood, iron, or stone; at times there are hygienic reasons for it—as in the case of enameled tiles that cover the wall surfaces in the bathroom; at times it is the means to a specific effect—as in the color painting of statues, the tapestries on walls, the veneer on wood. The principle of cladding, which was first articulated by Semper, extends to nature as well. Man is covered with skin, the tree with bark.



60 Vienna tramcar at the turn of the century. From Paul Kortz, Wien am Anfang des XX Jahrhunderts. Ein Führer in Technischer und Künstlerischer Richtung, hrsg. vom Österreichisches Ingenieur- und Architekten-Verein, *Vienna, 1905-1906.*

From the principle of cladding, however, I have derived a very precise law which I call the law of cladding. Do not be alarmed. It is usually said that laws put an end to all progressive development. And indeed, the old masters got along perfectly well without laws. Certainly. It would be idleness to establish laws against thievery in a place where thievery is unknown. When the materials used for cladding had not yet been imitated, there was no need for laws. But now it seems to me to be high time for them.

The law goes like this: we must work in such a way that a confusion of the material clad with its cladding is impossible. That means, for example, that wood may be painted any color except one—the color of wood. In a city where the exhibition committee decided that all of the wood in the Rotunda should be painted "like mahogany," in a city in which wood graining is the exclusive type of painted decoration, this is a very daring law. There seem to be people here who consider this kind of thing elegant. Since the railway and tramway cars—as well as the entire technique of carriage building—come from England, they are the only wooden objects that display pure colors. I now dare to assert that this kind of tramcar—especially one of the electric line—is more pleasing to me with its pure colors than it would be if, according to the principles of beauty set out by the exhibition committee, it had been painted "like mahogany."

But a true feeling for elegance lies dormant, although deep and buried, even in our people. If not, the railway administration could not count on the fact that the brown color of the third-class cars painted to look like wood would call forth a

lesser feeling of elegance than the green color of the second- and first-class cars.

I once demonstrated this unconscious feeling to one of my colleagues in a drastic manner. On the first floor of a building there were two apartments. The tenant of the one apartment had had his window bars, which had been stained brown, painted white at his own expense. We made a bet according to which we brought a certain number of people to the front of the building and, without pointing out to them the difference between the window bars, asked them on which side they felt that Herr Pluntzengruber lived and on which side Prince Liechtenstein—these were the two parties that we told them rented the apartments. All of those who were taken to the building unanimously declared that the wood-stained side was Pluntzengruber's. Since then my colleague has only painted things white.

Wood staining is, of course, an invention of our century. The Middle Ages painted wood bright red for the most part, the Renaissance blue; the Baroque and Rococo painted interiors white, exteriors green. Our peasants still retain enough good sense to paint only with pure colors. Don't the green gate and the green fence of the countryside, the green jalousies against the freshly whitewashed wall, have a charming effect? Unfortunately several villages have already adopted the taste of the exhibition commission.

One will still recall the moral indignation that arose in the camp of the surrogate arts and crafts when the first furniture painted with oil-base paint came to Vienna from England. But the rage of these good men was not directed against the paint. They painted with oil-base paints in Vienna too as soon as softwood came into use. But the fact that the English pieces dared to display their colors so openly and freely instead of imitating hardwood provoked these strange fellows. They rolled their eyes and acted as if they had never used oil-base colors at all. These gentlemen presumably thought that everyone hitherto had assumed their stained-wood furniture and buildings were actually made of hardwood.

I trust I can be assured of the Association's gratitude if, after such observations, I name no names among the painters at the exhibition.

Applied to stuccowork, the principle of cladding would run like this: stucco can take any ornament with just one exception—rough brickwork. One would think the declaration of such a self-evident fact to be unnecessary, but just recently someone drew my attention to a building whose plaster walls were painted red and then seamed with white lines. Similarly, the type of decoration so beloved in kitchens—imitation stone squares—belongs in this category. In general, any and all materials used to cover walls—wallpaper, oilcloth, fabric, or tapestries—ought not to aspire to represent squares of brick or stone. It is thus easy to understand why the legs of our dancers when covered with knit stockinets have such an unaesthetic effect. Woven underclothing may be dyed any color at all, just not skin color.

The cladding material can keep its natural color if the area to be covered happens to be of the same color. Thus, I can smear tar on black iron or cover wood with another wood (veneer, marquetry, and so on) without having to color the covering wood; I can coat one metal with another by heating or galvanizing it. But the principle of cladding forbids the cladding material to imitate the coloration of the underlying material. Thus iron can be tarred, painted with oil colors, or galvanized, but it can never be camouflaged with a bronze color or any other metallic color.

Here *chamottes*[4] and artificial stone tiles also deserve mention. The one kind imitates terrazzo (mosaic) paving, the other Persian carpets. Certainly there are people who actually take the tiles for what they are imitating—for the manufacturers must know their customers.

But no, you imitators and surrogate architects, you are mistaken! The human soul is too lofty and sublime for you to be able to dupe it with your tactics and tricks. Of course, our pitiful bodies are in your power. They have only five senses at their disposal to distinguish real from counterfeit. And at that point where the man with his sense organs is no longer adequate begins your true domain. There is your realm. But even here—you are mistaken once more! Paint the best inlays high, high up on the wood ceiling and our poor eyes will have to take it on good faith perhaps. But the divine spirits will not be fooled by your tricks. They sense that even those intarsia decorations most skillfully painted to look "like inlay" are nothing but oil paint.

1920 Bruno Taut: Down with seriousism!

In November 1919 the Berlin Arbeitsrat für Kunst was merged with the November Group. But Taut and Behne kept together their architect friends. At their instigation there was an exchange of circular letters, sketches, and essays in the nature of confessions of faith, known as *Die Gläserne Kette* (The Glass Chain). From January 1920 onward Taut had a new mouthpiece: in every issue of the periodical *Stadtbaukunst alter und neuer Zeit* (Urban Architecture Ancient and Modern) he had four to six pages to do with as he liked. Taut called this appendix *Frühlicht*[1] (Daybreak). The text reproduced below occupies the introductory page of this series.

Hopp! Hopp! Hopp! My sweet little horsey!
Hopp! Hopp! Hopp! Where do you want to go?
Over that high wall?
Well really I don't know!
Hopp! Hopp! Hopp! My sweet little horsey!
Hopp! Hopp! Hopp! Where – do – you – want – to go?
(Scheerbart, *Katerpoesie*)

Away with the sourpusses, the wailing Willies, the sobersides, the brow furrowers, the eternally serious, the sweet-sour ones, the forever important!

'Important! Important!' This damned habit of acting important! Tombstone and cemetery façades in front of junk shops and old clothes stores! Smash the shell-lime Doric, Ionic and Corinthian columns, demolish the pinheads! Down with the 'respectability' of sandstone and plate-glass, in fragments with the rubbish of marble and precious wood, to the garbage heap with all that junk!

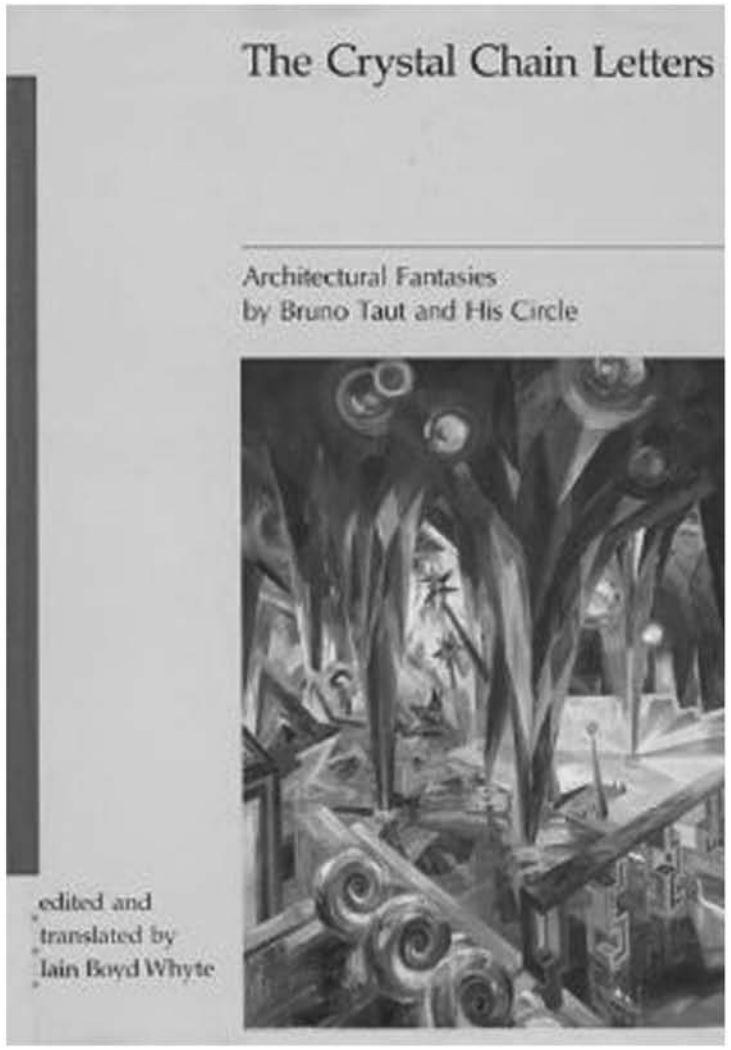
'Oh, our concepts: space, home, style!' Ugh, how these concepts stink! Destroy them, put an end to them! Let nothing remain! Chase away their schools, let the professorial wigs fly, we'll play catch with them. Blast, blast! Let the dusty, matted, gummed up world of concepts, ideologies and systems feel our cold north wind! Death to the concept-lice! Death to everything stuffy! Death to everything called title, dignity, authority! Down with everything serious!

Down with all camels that won't go through the eye of a needle, with all worshippers of Mammon and Moloch! 'The worshippers of force must knuckle under to force!' We are sick of their bloodsucking – caterwauling in the early light.

In the distance shines our tomorrow. Hurray, three times hurray for our kingdom without force! Hurray for the transparent, the clear! Hurray for purity! Hurray for crystal! Hurray and again hurray for the fluid, the graceful, the angular, the sparkling, the flashing, the light – hurray for everlasting architecture!

[1] B. TAUT. *Frühlicht – Eine Folge für die Verwirklichung des neuen Baugedankens.* Ullstein, Bauwelt Fundamente, Vol.8.

Bruno Taut, First letter to the Crystal Chain



1

Bruno Taut (Glas), 24 November 1919

Dear Friends,

I want to make this proposal to you: Today there is almost nothing to build, and if we can build anywhere, then we do it in order to live. Or are you lucky enough to be working on a nice commission? My daily routine almost makes me ill, and it is basically the same for all of you. As a matter of fact, it is a good thing that nothing is being built today. Things will have time to ripen, we shall gather our strength, and when building begins again we shall know our objectives and be strong enough to protect our movement against botching and degeneration.

Let us consciously be "imaginary architects"! We believe that only a total revolution can guide us in our task. Our fellow citizens, even our colleagues quite rightly suspect in us the forces of revolution. Break up and undermine all former principles! Dung! And we are the bud in fresh humus.

The individual personality will disappear with commitment to a higher task—if architecture reappears then the master builder will be anonymous.

I can see the beginning of this in our tendency to join and fuse together as a first cell, without asking—who did it? Instead, the idea exists in the realm of endless joy, remote and autonomous. The purpose of my proposal is to strengthen this existing unity. It is as follows:

Quite informally and according to inclination, each of us will draw or write down at regular intervals those of his ideas that he wants to share with our circle, and will then send a copy to each member. In this way an exchange of ideas, questions, answers, and criticism will be established. Above each contribution will be a pseudonym. The mutual sympathy within the circle and the use of terse language will make it difficult for outsiders to understand us. Nevertheless, we must agree not to reveal anything to uncomprehending eyes. Any request to expand the circle or to expel a member of the group should emerge from the contributions themselves. A single vote will suffice for an expulsion, unless all the other members veto it in their next letters.

Let it be a magnet, the snowy core of an avalanche! If nothing comes of the idea, if I am deluding myself, then at least it will be a beautiful memory for each of us.

By the way: Whoever leaves the group before the whole thing comes to an end is obliged to return all the contributions he has accumulated either to me or another member, or to destroy them.,

If you agree, could you sign and return this to me as soon as possible, together with the desired pseudonym. I will let you have the result immediately and—the thing will be under way.

With color and glass greetings,

Glas

Art becomes life

1922 'De Stijl': Creative demands

De Stijl made its voice heard all over Europe. Month by month the periodical spread the principles of elemental creativity. Theo van Doesburg travelled from city to city delivering lectures. 'The progressive architects of Holland have adopted an international standpoint.' Which 'has grown up out of practice'. The field of practice had itself expanded. In 1920 *De Stijl* formulated its literature manifesto and in 1921 the manifesto *Vers une nouvelle formation du monde*. At the International Artists Congress in Düsseldorf in May 1922 van Doesburg announced: 'We are preparing the way for the use of an objective universal means of creation.'

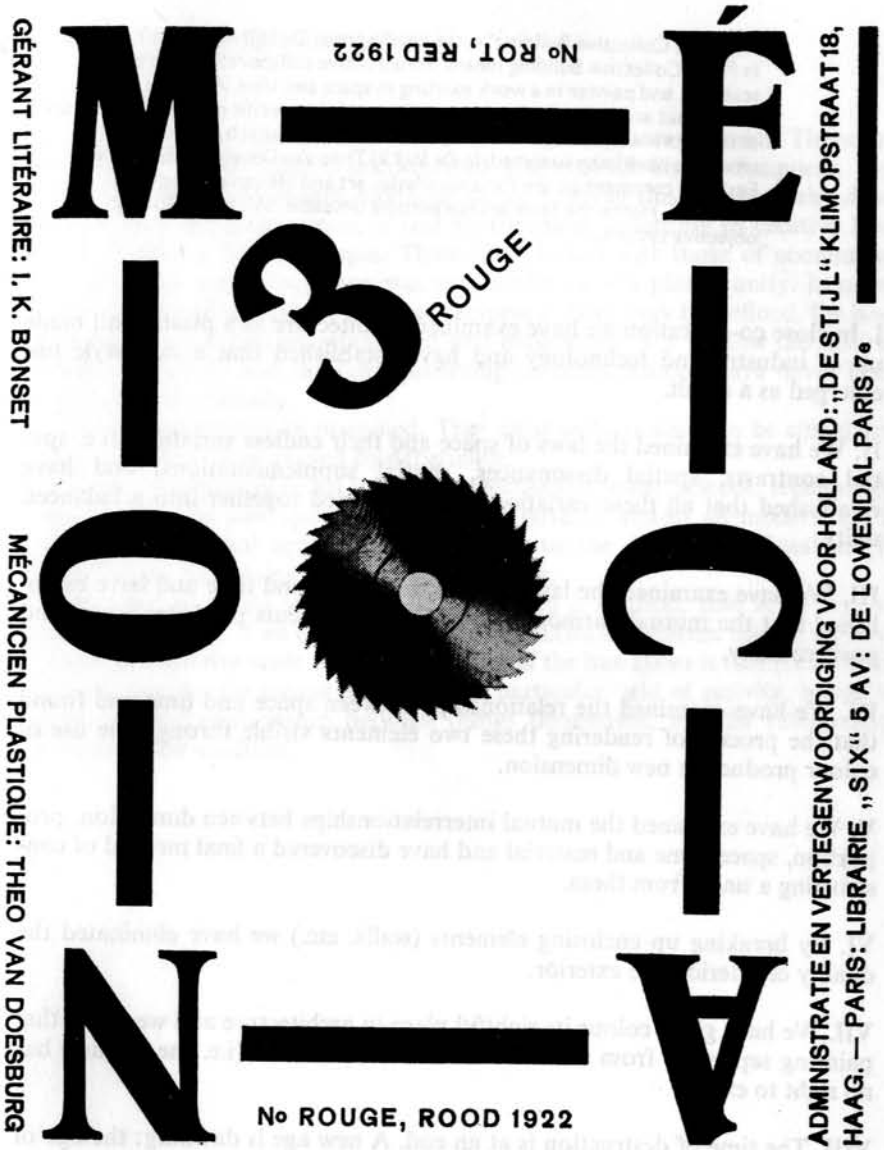
1. The end of exhibitions. Instead: demonstration rooms for total works.

2. An international exchange of ideas concerning creative problems.

3. The development of a universal means of creation for all arts.

4. An end to the division between art and life. (Art becomes life.)

5. An end to the division between artist and man.



Theo van Doesburg, 1922

1923 Ludwig Mies van der Rohe: Working theses

Mies van der Rohe's theses, written in May 1923, appeared together with his design for an office building of reinforced concrete (1922) in the first number of *G*, of which Mies was one of the founders. Apart from Mies (b. 1886 in Aix-la-Chapelle, d. 1969 in Chicago), Graeff, and Richter, other contributors were Gabo, Pevsner, Haussmann – all of whom were living in Berlin at the time – and Doesburg in Paris. This was a surprising concentration and meeting of forces: De Stijl and Russian Constructivism met at a place at which, just half a year earlier, in winter 1922–3 on the occasion of the architectural exhibition in the Berlin Secession, critics had unanimously stated: this is the 'New Architecture'.

We reject { **all aesthetic speculation,**
all doctrine,
and all formalism.

Architecture is the will of the age conceived in spatial terms.

Living. Changing. New.

Not yesterday, not tomorrow, only today can be given form.

Only this architecture creates.

Create form out of the nature of the task with the means of our time.

This is our work.

O F F I C E B U I L D I N G

The office building is a house of work of organization of clarity of economy.

Bright, wide workrooms, easy to oversee, undivided except as the organism of the undertaking is divided. The maximum effect with the minimum expenditure of means.

The materials are concrete iron glass.

Reinforced concrete buildings are by nature skeletal buildings. No noodles nor armoured turrets. A construction of girders that carry the weight, and walls that carry no weight. That is to say, buildings consisting of skin and bones.

1928 Hannes Meyer: Building

In 1928 Hannes Meyer (b.1889 in Basle, d.1954 in Crocifisso di Savosa, Switzerland) was appointed head of the Bauhaus in Dessau. Walter Gropius retired at the beginning of February 1928 and recommended him as his successor. The same month Meyer outlined before representatives of the students his programme, which was aimed essentially at a closer combination of teaching and work in the Bauhaus with life. 'Do we wish to take our direction from the needs of the outer world . . . or do we want to be an island which admittedly leads to a broadening of the personality, but whose positive productivity is questionable?' His thesis 'building' was published in *bauhaus* Year 2, No.4.

building
all things in this world are a product of the formula: (function times economy).

all these things are, therefore, not works of art:
all art is composition and, hence, is unsuited to achieve goals.
all life is function and is therefore unartistic.
the idea of the 'composition of a harbour' is hilarious!
but how is a town plan designed? or a plan of a dwelling? composition or function? art or life?????
building is a biological process. building is not an aesthetic process.
in its design the new dwelling becomes not only a 'machine for living', but also a biological apparatus serving the needs of body and mind.
the new age provides new building materials for the new way of building houses:

reinforced concrete	aluminium	ripolin
synthetic rubber	euböolith	viscose
synthetic leather	plywood	asbestos concrete
porous concrete	hard rubber	bitumen
woodmetal	torfoleum	canvas
wire-mesh glass	silicon steel	asbestos
pressed cork	cold glue	acetone
synthetic resin	cellular concrete	casein
synthetic horn	rolled glass	trolite
synthetic wood	xelotect	tombac

we organize these building materials into a constructive whole based on economic principles. thus the individual shape, the body of the structure, the colour of the material and the surface texture evolve by themselves and are determined by life. (snugness and prestige are not leitmotifs for dwelling construction.) (the first depends on the human heart and not on the walls of a room . . .) (the second manifests itself in the manner of the host and not by his persian carpet!)

bauen

alle dinge dieser welt sind ein produkt der formel: (funktion mal ökonomie)

alle diese dinge sind daher keine kunstwerke:
alle kunst ist komposition und mithin zweckwidrig.
alles leben ist funktion und daher unkünstlerisch.
die idee der „komposition eines seehafens" scheint zwerchfellerschütternd!
jedoch wie ersteht der entwurf eines stadtplanes? oder eines wohnplanes? komposition oder funktion? kunst oder leben? ? ? ? ?

bauen ist ein biologischer vorgang. bauen ist kein aesthetischer prozeß. elementar gestaltet wird das neue wohnhaus nicht nur eine wohnmaschinerie, sondern ein biologischer apparat für seelische und körperliche bedürfnisse. — die neue zeit stellt dem neuen hausbau ihre neuen baustoffe zur verfügung:

stahlbeton, kunstgummi, kunstleder, zell-beton, woodmetall, drahtglas, preßkork, kunstharz, kunsthorn, kunstholz, aluminium, euböolith, sperrholz, kautschuk, torfoleum, si-stahl, kaltleim, gasbeton, roliglas, xelotekt, ripolin, viscose, eternit, goudron, kanevas, asbest, azeton, casein, trolit, tombak

diese bauelemente organisieren wir nach ökonomischen grundsätzen zu einer konstruktiven einheit. so erstehen selbsttätig und vom leben bedingt die einzelform, der gebäudekörper, die materialfarbe und die oberflächenstruktur. (gemütlichkeit und repräsentation sind keine leitmotive des wohnungsbaues.)
(die erste hängt am menschenherzen und nicht an der zimmerwand. . . .)
(die zweite prägt die haltung des gastgebers und nicht sein perserteppich!)

architektur als „affektleistung des künstlers" ist ohne daseinsberechtigung.
architektur als „fortführung der bautradition" ist baugeschichtlich treiben.

diese funktionell-biologische auffassung des bauens als einer gestaltung des lebensprozesses führt mit folgerichtigkeit zur reinen konstruktion: diese konstruktive formenwelt kennt kein vaterland. sie ist der ausdruck internationaler baugesinnung. internationalität ist ein vorzug der epoche. die reine konstruktion ist grundlage und kennzeichen der neuen formenwelt.

1. geschlechtsleben	4. gartenkultur	7. wohnhygiene	10. erwärmung
2. schlafgewohnheit	5. körperpflege	8. autowartung	11. besonnung
3. kleintierhaltung	6. wetterschutz	9. kochbetrieb	12. bedienung

solche forderungen sind die ausschließlichen motive des wohnungsbaues. wir untersuchen den ablauf des tageslebens jedes hausbewohners, und dieses ergibt das funktionsdiagramm für vater, mutter, kind, kleinkind und mitmenschen. wir erforschen die beziehungen des hauses und seiner insassen zum fremden: postbote, passant, besucher, nachbar, einbrecher, kaminfeger, wäscherin, polizist, arzt, aufwartefrau, spielkamerad, gaseinzüger, handwerker, krankenpfleger, bote. wir erforschen die menschlichen und die tierischen beziehungen zum garten, und die wechselwirkungen zwischen menschen, haustieren und hausinsekten. wir ermitteln die jahresschwankungen der bodentemperatur, und wir berechnen danach den wärmeverlust der fußböden und die tiefe der fundamentsohlen. — der geologische befund des haus-

architecture as 'an emotional act of the artist' has no justification.
architecture as 'a continuation of the traditions of building' means being carried along by the history of architecture.
this functional, biological interpretation of architecture as giving shape to the functions of life, logically leads to pure construction: this world of constructive forms knows no native country. it is the expression of an international attitude in architecture. internationality is a privilege of the period. **pure construction is the basis and the characteristic of the new world of forms.**

1. sex life	5. personal hygiene	9. cooking
2. sleeping habits	6. weather protection	10. heating
3. pets	7. hygiene in the home	11. exposure to the sun
4. gardening	8. car maintenance	12. service

these are the only motives when building a house. we examine the daily routine of everyone who lives in the house and this gives us the function-diagram for the father, the mother, the child, the baby and the other occupants. we explore the relationships of the house and its occupants to the world outside: postman, passer-by, visitor, neighbour, burglar, chimney-sweep, washerwoman, policeman, doctor, charwoman, playmate, gas inspector, tradesman, nurse, and messenger boy, we explore the relationships of human beings and animals to the garden, and the interrelationships between human beings, pets, and domestic insects. we determine the annual fluctuations in the temperature of the ground and from that calculate the heat loss of the floor and the resulting depth required for the foundation blocks. the geological nature of the soil informs us about its capillary capability and determines whether water will naturally drain away or whether drains are required. we calculate the angle of the sun's incidence during the course of the year according to the latitude of the site. with that information we determine the size of the shadow cast by the house on the garden and the amount of sun admitted by the window into the bedroom. we estimate the amount of daylight available for interior working areas. we compare the heat conductivity of the outside walls with the humidity of the air outside the house. we already know about the circulation of air in a heated room. the visual and acoustical relationships to neighbouring dwellings are most carefully considered. knowing the atavistic inclinations of the future inhabitants with respect to the kind of wood finish we can offer, we select the interior finish for the standardized, prefabricated dwelling accordingly: marble-grained pine, austere poplar, exotic okumé or silky maple. colour to us is merely a means for intentional psychological influence or a means of orientation. colour is never a false copy of various kinds of material. we loathe variegated colour. we consider paint to be a protective coating. where we think colour to be psychically indispensable, we include in our calculation the amount of light reflection it offers. we avoid using a purely white finish on the house. we consider the body of the house to be an accumulator of the sun's warmth . . .

the new house is a prefabricated building for site assembly; as such it is an industrial product and the work of a variety of specialists: economists, statisticians, hygienists, climatologists, industrial engineers, standardization experts, heating engineers . . . and the architect? . . . he was an artist and now becomes a specialist in organization!

the new house is a social enterprise. it frees the building industry from partial seasonal unemployment and from the odium of unemployment relief work. by rationalized housekeeping methods it saves the housewife from household slavery, and by rationalized gardening methods it protects the householder from the dilettantism of the small gardener. it is primarily a social enterprise because it is – like every government standard – the standardized, industrial product of a nameless community of inventors.

the new housing project as a whole is to be the ultimate aim of public welfare and as such is an intentionally organized, public-spirited project in which collective and individual energies are merged in a public-spiritedness based on an integral, co-operative foundation. the modernness of such an estate does not consist of a flat roof and a horizontal-vertical arrangement of the façade, but rather of its direct relationship to human existence. in it we have given thoughtful consideration to the tensions of the individual, the sexes, the neighbourhood and the community, as well as to geophysical relationships.

building is the deliberate organization of the processes of life.
building as a technical process is therefore only one part of the whole process. the functional diagram and the economic programme are the determining principles of the building project.
building is no longer an individual task for the realization of architectural ambitions.
building is the communal effort of craftsmen and inventors. only he who, as a master in the working community of others, masters life itself . . . is a master builder.
building then grows from being an individual affair of individuals (promoted by unemployment and the housing shortage) into a collective affair of the whole nation.
building is nothing but organization:
social, technical, economic, psychological organization.

Charlotte Perriand, Wood or Metal

"WOOD OR METAL?"

The Studio 97, no. 433 (Apr. 1929), 278–79

WOOD OR METAL?

A reply to Mr. John Gloag's article in our January issue by Charlotte Perriand who, as champion of new ideas, has adopted an original style of expressing them

METAL plays the same part in furniture as cement has done in architecture.

IT IS A REVOLUTION.

The FUTURE will favour materials which best solve the problems propounded by the new man:

I understand by the NEW MAN the type of individual who keeps pace with scientific thought, who understands his age and lives it: The Aeroplane, the Ocean Liner and the Motor are at his service;

Sport gives him health;

His House is his resting place.

WHAT IS HIS HOUSE TO BE?

Hygiene must be considered first: soap and water.

Tidiness: standard cupboards with partitions for these.

Rest: resting machines for ease and pleasant repose.

Beds: armchairs: chaises longues:

Office chairs and tables: Stools, some high and some low: Folding chairs.

The French word for furniture, "MEUBLES" comes from the Latin "mobilis": meaning things that can be moved about.

The only things that come into this category are chairs and tables.

We have stated the problem; now we must solve it. . . .

MATERIAL NOW IN USE AND MATERIAL THAT OUGHT TO BE USED.

WOOD: a vegetable substance, in its very nature bound to decay, it is susceptible to the action of damp in the air. "Central heating dries the air and warps wood." Since the war, we don't get dry wood any more: it is dried by artificial means, and inadequately.

Plywood: Composition wood:

These should be used for panels, mounted on a metal framework, and allowing for "play."

METAL: a homogeneous material of which certain alloys are liable to be affected by acids in the air:

In that case protection is afforded by oxidising, or by application of paint, Duco, etc. . . .

Cupboards of beaten sheet iron:

For chairs, metal "bicycle" tubes:

A bicycle weighs only 10 to 12 kilograms. The minimum of weight, the maximum of strength:

Autogenous welding = △

This process opens a vast field of practical possibilities.

The ratio between the weight necessary to ensure against breakage and the conditions of construction, in other words, the coefficient of security, would be about 6 in the case of metal, 10 in the case of wood. To be of the same solidity the wood would have to be 14 times as thick as metal:

THRUST	|	14 times more in
COMPRESSION	|	wood than in steel
FLEXION	|	

TECHNICAL CONCLUSIONS:

The EIFFEL TOWER could never have been made of Wood.

Metal is superior to wood; reasons?

The power of resistance in metal itself;

Because it allows of mass production in the factory (lessens amount of labour required);

Because by means of the different methods of manufacture it opens out new vistas; new opportunities of design;

Because the protective coatings against toxic agencies not only lower the cost of upkeep, but have a considerable ÆSTHETIC value.

METAL plays the same part in furniture as cement has done in architecture.

IT IS A REVOLUTION.

ÆSTHETICS OF METAL.

Aluminum varnish, Duco,

Parkerisation, Paint,

all provide variety in the treatment of metal.

If we use metal in conjunction with leather for chairs, with marble slabs, glass and india-rubber for tables, floor coverings, cement,

vegetable substances,

we get a range of wonderful combinations and new æsthetic effects.

UNITY IN ARCHITECTURE and yet again

POETRY

A new lyric beauty, regenerated by mathematical science;

Has produced a new kind of man who can love with fervour; Orly's "Avion Voisin," a photograph of the Mediterranean, and "Ombres Blanches."

Even Mont Cervin is restored to a place of honour.

AS FOR THE PUBLIC:

OPERATION THEATRES: Clinics, Hospitals:

Improve physical and moral health,

Nothing extraneous.

FASHION: Look at the shops (which serve the public taste).

They make metallised wood;

They make imitation oak of metal;

They have even planned a chair made of plywood, metal and india-rubber to imitate marble.

LONG LIVE COMMERCE.

THE MAN OF THE XXth CENTURY:

An INTRUDER? Yes, he is, when surrounded by antique furniture, and NO, in the setting of the new Interior.

SPORT, *indispensable for a healthy life in a mechanical age.*

Modern mentality also suggests:

Transparency, reds, blues,

The brilliance of coloured paint,

That chairs are for sitting on,

That cupboards are for holding our belongings,

Space, light,

The Joy of creating and living . . .

in this century of ours.

BRIGHTNESS LOYALTY LIBERTY

in thinking and acting.

WE MUST KEEP MORALLY AND PHYSICALLY FIT.

Bad luck for those who do not.

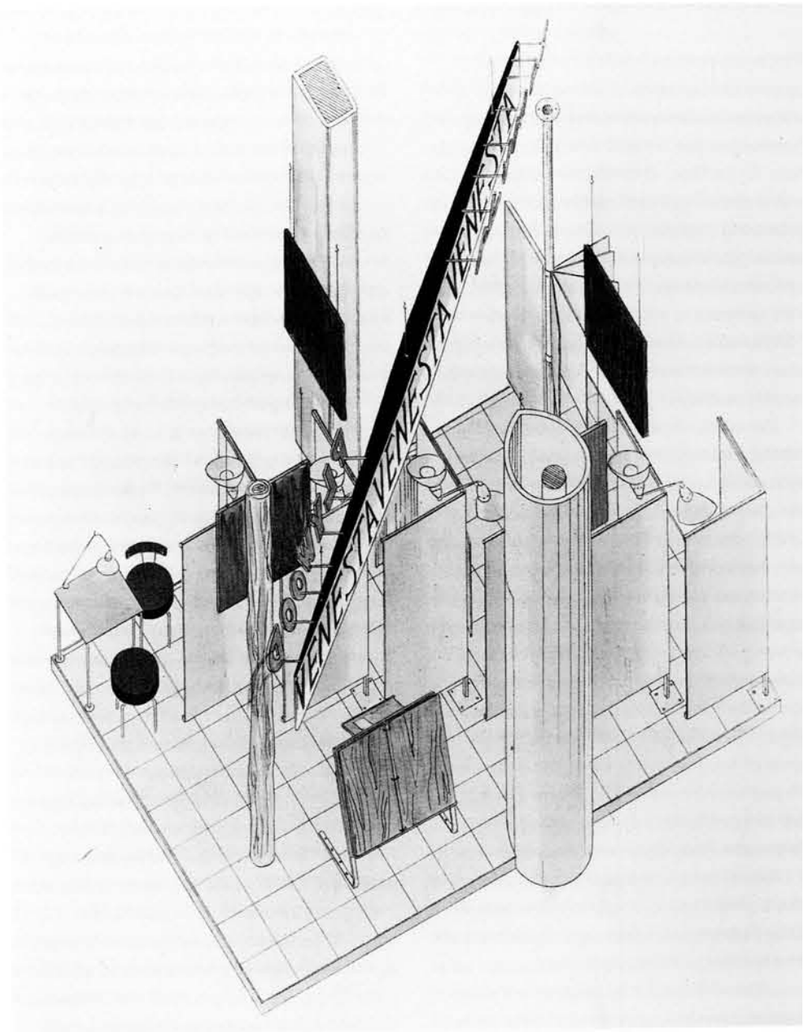


FIG 2
LE CORBUSIER–JEANNERET–PERRIAND.
Isometric drawing of the Venesta Plywood exhibition stand. 1930. In "Wood or Metal?" Perriand wrote: "Plywood: Composition wood: These should be used for panels, mounted on a metal framework, and allowing for 'play.'"

Eileen Gray and Jean Badovici, "Maison en bord de mer" (House by the Sea), *L'Architecture Vivante* (winter 1929)

From Eclecticism to Doubt

– Don't you fear that this return to fundamentals, this systematic simplification that seems to dictate modern art, will only end by grounding this art in general, and architecture in particular, in a purely theoretical pursuit that is too intellectual to satisfy the demands of both our minds and our bodies? The human being is not a pure intellect. And when one sees these large buildings with smooth lines and especially these interiors, where everything seems to derive from strict and cold calculations, one must ask whether people could be satisfied living in such a place.

– You are right. This return to essential elements, this emancipation from all that was inessential, responded to a need. It is necessary to liberate oneself from such oppression in order to experience freedom anew. But this state of intellectual coldness that we have reached, which corresponds only too well to the harsh laws of modern mechanization, can be no more than a passing phase. We must rediscover the human being in plastic expression, the human intention that underlies material appearance and the pathos of this modern life, which has initially been expressed only in algebraic terms.

– To what pathos are you referring?

– To the pathos that is inseparable from all real life.

– In short, you mean to rediscover emotion.

– Yes, but a purified emotion that can be expressed in a thousand ways. It is not necessary to return to old complexities. Sometimes all that is required is the choice of a beautiful material worked with sincere simplicity. It is necessary to reconstruct an ideal that is able to satisfy the most general modern consciousness while guarding against all excesses, but without neglecting individual pleasures.

– So you advocate a return to feelings, to emotionalism!

– Yes, but once again to an emotion that is purified by knowledge and enriched by ideas and does not exclude the knowledge and appreciation of scientific achievements. It is only necessary to demand of artists that they be of their time.

– You intend that they be of their own era and express it.

– Yes, without artifice of any kind. The work of beauty is more genuine than the artist.

– But how can one express an era and, above all, one like ours that is so full of contradictions, where the past survives in so many respects and where, on the other hand, one sees such extreme points of view?

– Every work of art is symbolic. It conveys, it suggests the essential more than representing it. It is up to artists to find, in this multitude of contradictory factors, those that constitute the intellectual and emotive framework of man as both an individual and a social being.

– Do you think that inspiration will ever suffice for such a task?

– It is life itself, the meaning of life, that provides inspiration, but inspiration and faith can no longer provide knowledge as complex as that required today – knowledge of the conditions of existence, of human tastes and aspirations, passions and needs, as well as technical knowledge and material means.

– You demand that the architect have a universal mind?

– Almost! But the essential thing is that he understand the meaning of each thing; that he know how to remain straightforward and sensible, without neglecting any means of expression. The most diverse materials will be useful to him in turn, and he will be able to express what he wants of the life around him through the judicious use of new materials as much as through the architectural structure itself.

– There is a word that you have not mentioned but is implicit in your discussion: that is *unity*. For it seems evident that, just as much as the elements of construction, this diversity of inspirational factors would only lead to chaotic disorder if the architect did not direct them explicitly toward a common goal.

– Indeed, strictly speaking, there is no architectural creation that is not an organic unity. But, although such unity was formerly completely external, it is now a question of making it internal as well, including the smallest details.

[–] But could so systematic a unity be reconciled with that diversity of which you spoke earlier?

– Evidently! It is by interpreting the desires, passions, and tastes of the individual that one will best interpret social life and collective order. Art is founded upon habitude, but not upon the fleeting or artificial habits that give rise to fashion. The object should be given a form that is most suited to the spontaneous gesture or instinctive reflex that corresponds to its purpose.

– Aren't you afraid that the material life will thus overwhelm the spiritual?

– The public has already reacted against such a misinterpretation and brought swift justice to it. The introduction of camping furniture, deck chairs, and folding furniture into a room intended for rest or work is just such an excess. No more intimacy, no more atmosphere! Everything has been simplified to death. Simplicity does not follow from simplification, particularly such crude simplification. Formulas are nothing; life is everything. And life is simultaneously mind and heart.

– In short, you want to react against fashionable formulas by returning to the past.

– No, on the contrary, I want to develop these formulas and push them to the point where they reestablish contact with life, to enrich them and incorporate reality within their abstraction. Art is not just the expression of abstract relationships; it must also encapsulate the most tangible relations, the most intimate needs of subjective life. In addition to inspiration, genuine scientific experimentation is needed to sustain it.

– You want architecture to be a symphony in which all inner forms of life are expressed.

– Exactly. In it dream and reality will find equal support.

– Decoration could be a powerful aid in this.

– Architecture must be its own decoration. The play of lines and colors should respond so precisely to the needs of the interior atmosphere that all detached paintings or pictures would seem not only useless, but detrimental to the overall harmony.

– Isn't that what so-called avant-garde architecture sought to accomplish?

– In a sense, yes, but in one sense only. For the avant-garde, architectural creation must be self-sufficient, with no consideration for the atmosphere that the inner life calls for. It is a creation of proportions that are sometimes intelligent, but detached from its main object, which is the living human being. It relies on the occasional, the accidental, when only universal sentiments should be conveyed and fulfilled, and only the human being should be considered – but the human being of a particular era, with the tastes, feelings, and gestures of this era.

– Yes, but all the same it was the avant-garde who first stressed the need to respect proportions in order to create well-balanced objects.

– The avant-garde has only reminded us of a very old and often forgotten principle, while overlooking the fact that proportions and balance were only present in art because they existed first of all in life, as vital principles. It is overintellectualized: an art of thought and calculation, but lacking in heart.

– It is true that many works are a bit cold, but isn't that because we are influenced by the recent past? And aren't the principles of hygiene partly responsible for this coldness that disturbs us?

– Yes! Hygiene to bore you to death! Hygiene that is badly understood, because hygiene excludes neither comfort nor activity. No, the avant-garde is intoxicated by mechanization. But there is more than mechanization; the world is full of vivid allusions, vivid symmetries that are difficult to discover, but nevertheless real. Their excessive intellectualism suppresses that which is marvelous in life, just as their misunderstood concern for hygiene makes hygiene intolerable. Their desire for strict precision has made them neglect the beauty inherent to all forms: disks, cylinders, undulating lines, and zigzags, ellipsoidal lines that are like straight lines in motion. Their architecture has no soul.

– It is clear that they build houses just like engineers build their machines. But is that necessary?

– In terms of technique, yes. But technique is not everything; it is only the means. One must build for the human being, that he might rediscover in the architectural construction the joys of self-fulfillment in a whole that extends and completes

him. Even the furnishings should lose their individuality by blending in with the architectural ensemble.

– Today's architects scarcely speak of anything but standardization and rationalization. Can you explain the meaning they give these terms, which I have often heard elsewhere but with a significance that I can hardly associate with architecture?

– It's always the same thing. Technique becomes the primary concern. By focusing on the means one forgets the ends. If we aren't careful, standardization and rationalization, both excellent means for reducing costs, will only lead to providing buildings that are even more deprived of soul and individuality than those we have seen thus far. One seeks a type of architecture more than a genuine style.

But for a certain type of architecture to have true value, it must correspond to a generally accepted conception, to a collective taste, to an ideal. How can we achieve such a result if we build without the least concern for the inhabitants' well-being and personal comfort, and if we don't take into account their human need to discover in the places where they live certain characteristics that express their individual personalities and their own tastes? How can architects who focus only on minimizing costs both satisfy public taste and please the elite? Besides, it seems inevitable that this kind of typological research can only lead to extreme simplification and ultimately to concepts that are as poor as they are limited.

– The search for a building type evidently coincides with economic circumstances against which one can do nothing.

– No doubt!

[–] But is it necessary to present something as ideal that results only from such an unfortunate necessity?

– I think that most people are mistaken in the meaning that they have agreed to give this word "type." For them "type" is synonymous with a creation that is simplified in the extreme and destined to be reproduced in series. But I understand otherwise. *To me* a maison type *is only a house whose construction has been realized according to the best and the least costly technical means and whose architecture achieves the maximum perfection for a given situation; that is to say, it is a model, not to be reproduced* ad infinitum, *but that will inspire the construction of other houses in the same spirit.*

– Certainly it is along these lines that research into the architectural "type" of our era should be understood. Far from being dangerous, research of this sort would become not only an economic necessity, but a logical and moral one as well. Besides its great advantage of opening up enormous possibilities for future pursuits, it encompasses a sort of fundamental unity, which – through its diversity of details and multiplicity of applications – will increase the value of future developments. The type should not respond solely to commercial concerns. It must express the psychological reality of an era.

Description [of E.1027]

External architecture seems to have absorbed avant-garde architects at the expense of the interior, as if a house should be conceived for the pleasure of the eye more than for the well-being of its inhabitants. If lyricism can be dedicated to the play of masses brought together in daylight, the interior should respond to human needs and the exigencies of individual life, and it should ensure calm and intimacy. Theory is insufficient for life and does not respond to all its requirements. It is necessary to free oneself of a tendency with obvious failings and seek to create an interior atmosphere that is in harmony with the refinements of modern life while utilizing current technical resources and possibilities. The thing constructed is more important than the way it is constructed, and the process is subordinate to the plan, *not the plan to the process.* It is not only a matter of constructing beautiful arrangements of lines, but above all *dwellings for people.*

To consider the construction of a table or a chair as a sculptural entity, undertaking it only from the point of view of formal harmony, necessarily leads to excess and to absurdity, which misleads public taste and makes those who have not abandoned the notion of practical utility seem outdated.

Tubular steel as it is conceived and used by avant-garde architects is expensive, unstable, and cold. The need to distinguish oneself, to be original at all costs, leads to suppressing the most elementary concern for practical comfort. All of these inventions with modern pretensions that appear and disappear respond only to a fleeting fashion, and they lack any genuine style. There is no one particular style. The true creator aims for the universal.

The "camping" style is only a temporary means and the creations that are inspired by it are undeniably precarious. It leads to an impoverishment of the inner life by suppressing all intimacy. The truly civilized man requires a certain formal elegance: he knows the propriety of certain gestures; he needs to be able to isolate himself.

In this very small house we have tried to express two parallel ways of life: the "camping" method, which responds to an accidental need for outward expression, and the normal method, which tends to provide an independent and remote center where the individual can develop his profound powers. One must anticipate that the present need for action, for a hectic life, will come to an end; that it will subside as soon as the effects of the war disappear and will be replaced by the need for inner knowledge and refinement. It is up to artists to take the lead in this inevitable recovery, to alter its direction and facilitate its development.

The interior plan should not be the incidental result of the facade; it should lead a complete, harmonious, and logical life. Rather than being subordinated to the external volume, it should on the contrary control it. It should not be pure convention, as in the eighteenth century, but on the contrary, as in Gothic times, a homogeneous whole built for man, to the human scale, and balanced in all its parts.

The house that we are going to describe should not be considered perfect, with all of its problems resolved. It is only an attempt, a moment in a more general pursuit. If certain of the innovations that it provides can be regarded as definitive and should be adopted everywhere, others need further improvements, and still others should be brushed aside.

If in regarding the dwelling as a living organism we have been led to adopt the current formula of the "living room," we at least sought to plan the room in such a way that each of its inhabitants could, on occasion, achieve total independence and an atmosphere of solitude and contemplation. The entrance is done away with, as befits a region where the windows and doors are rarely closed; but on the other hand one has sought an architectural layout that separates the interior from the exterior. One avoids making a door when one fears that it may open at any moment, evoking the possibility of an inopportune visit. For the same reason, this arrangement has also been adopted for the rooms.

The four essential issues on which we have focused attention are:

1. The problem of windows, for which we have created three types.
2. The problem, often neglected and thus very important, of shutters: a window without shutters is an *eye without eyelids.* Otherwise, all the current combinations lead to the same result: insufficient ventilation when the shutters are closed. Our method leaves a large area for the free passage of fresh air while blocking excess light.
3. The problem of the independence of the rooms: everyone, even in a house of restricted dimensions, must be able to remain free and independent. They must have the *impression* of being alone, and if desired, entirely alone. This has led us to position the walls so that the doors remain out of sight.
4. The problem of the kitchen, which should be easily accessible yet sufficiently isolated that no odors can penetrate the living spaces. We have separated the kitchen from the rest of the house: one can only go from one to the other by passing through the entry threshold, which is only possible in an exceptionally mild climate.

As to the seaside character of the house, it results inevitably from the ambiance, from the materials imposed by this ambiance, and from the views of the sea.

The Entry. – This is a large covered space: a sort of atrium; it is large, accommodating, and not like the small narrow doors that only seem to open reluctantly. Ahead is a large blank wall, suggesting the idea of resistance, but clear and distinct. To the right is the main entry, to the left the service door.

The door to the right leads to the main room: a partition screen obstructs views that might penetrate from the exterior to the interior when the door is open.

Built into the wall of the stair to the left is the *niche for hats,* a half cylinder in transparent celluloid, with its shelves made of loose-knit twine nets, so the dust cannot settle. A tube along the length of the partition accommodates umbrellas dropped

there freely and effortlessly. In a drum by the entry a system of runners carries hangers for umbrellas. Under the hat niche is a deep cupboard for storing extra chairs that one uses only for entertaining.

The Large Room. – The house has been built for a man who loves work, sports, and entertaining. Although it is very small, its layout should permit the occupant to welcome friends and entertain them. Only the "camping" style allows this otherwise exceptional difficulty to be resolved: one has resorted to it without thinking for an instant that it might result in a normative method, or that it will be the style of tomorrow, but simply as a convenient response to an exceptional circumstance.

To allow for entertaining numerous guests one has made a convertible room of 14 x 6.30 meters. Because this room is to be used for other purposes, a low wall at its end that allows the entire ceiling to be visible from any point conceals a dressing area, complete with shower, linen chest, cupboard, etc.

Against the full wall is a large divan of 2.20 x 2 meters, where one can stretch out or sit, rest or converse comfortably – an indispensable item that can be converted into a bed. The cushions can be placed around it like satellites to extend the divan by 4 cm, providing comfortable and relaxing seating.

Opposite the dressing area, an alcove shelters a small divan at the head of which is a flat storage unit containing pillows, mosquito netting, teakettle, and books. A flexible table with two pivots allows for reading while lying down. A white lamp mounted between two panes of blue glass provides rational light.

At the head of the small divan a double door gives access to a covered terrace sufficiently large to hang a hammock. A metal door is embedded in the thickness of the wall, as well as a shuttered door with pivoting slats, to allow practical ventilation and to give the sleeping figure the impression of being outdoors when the first door is left open. A pierced opening high in the fixed part of the glazed frame at the foot of the bed provides for excellent cross-ventilation on warm summer nights.

Above the small divan, a thin cable at arm's reach allows the mosquito netting to be extended at night.

The fireplace against the window allows one to enjoy firelight and natural light at the same time.

The furnishings – chairs, screens and pile carpets, the warm leather colors, low metallic luster, and depth of the cushions – all contribute to an atmosphere of intimacy. A marine chart, lit at night, brings an ingenious note, evoking distant voyages and encouraging daydreams. Even the carpets are reminiscent of marine horizons, through their color and form.

When viewed from within the room, the entry partition consists of a series of racks that end in a deep vertical segment of a celluloid half cylinder, which encloses a column of gramophone records. This is the music corner, and the felicitous arrangement of the partition serves to amplify the sound.

The tea table is made of tubes that can be retracted, and it is covered with a cork sheet to avoid the impact and noise of fragile cups. It includes disks for fruits and cakes, and a narrower end on which to rest the cup that one is about to offer.

The terrace adjoining the large room serves as an extension to that space when the window panels are folded up against the pillars. Its full balustrade has been replaced by one in cloth that can easily be removed to allow one to warm one's legs in the winter sun. The cloth canopy is made of four independent pieces to resist the strongest mistral winds; it allows cool shade in the summer when the sun is blazing, and full exposure to the sun's heat in winter, while being sheltered from the wind.

On this terrace, which gently slopes toward the interior and has a gutter under the glazed doors to accommodate run-off, a *heavy brush-weave carpet for the terrace garden* provides a note of gaiety. The fleeting patterns of sun and shadow play freely about, and the breeze flows in from the far horizon. It is a preferred location where one can, according to the hour and the mood of the weather, either hide from or stretch out in the full sun.

When the seas are rough and the horizon gloomy, it suffices to close the large southern windows, draw the curtains, and open the small northern window that overlooks the garden of lemon trees and the old village, to seek a new and different horizon where the masses of greenery replace the expanses of blue and gray.[1]

The space used to serve and clear the dining room can be transformed into a bar. The bar's horizontal surface of striated aluminum, which is used for serving meals, can be folded up against a pillar, while a second serving table has pivoting drawers. The dining table is surfaced in cork to avoid the noise of plates and place settings. The table is supported on legs of tubular steel that can be extended or adjusted effortlessly.

At the end of the table, a leaf and two runners covered in leather provide a place to set down a serving tray. During the summer one can either push the table onto the terrace, or, by sliding the terrace doors open, expose the dining room to the exterior.

The bar ceiling is split diagonally in two panels, one of which is higher than the other, allowing the lighting to reach the bottles. The fixed part of the table on which one prepares the drinks is lit by a circular device fixed to the ceiling. The bar also has a box for lemons and one for plates. A pair of doors can be closed to allow the service spaces to be completely isolated from the living spaces. The maid would pass directly from the kitchen to her room on the lower level.

The Table-Units. – Each room has a table that can serve as a writing desk. For entertaining, all these tables can be brought to the large room, stretched out, and – since the supports can be adjusted one inside the other – made into a very large dining table that is lightweight but perfectly stable.

The principal bedroom includes a boudoir/studio with a small private terrace on which is a daybed in the open air. A dressing cabinet in aluminum and cork conceals the washstand and, when opened, forms a screen; although very shallow, it contains all the drawers and bottles necessary for grooming oneself. A washbasin is there in case the bathroom is being used by friends. Service can be provided directly from the bathroom, which adjoins this small bedroom. From this room one can go directly to the garden via a small external stair; the independence of each room is assured, despite the small size of the house. There is a level of comfort that one would expect only in a much larger dwelling.

The room is sunny from morning to evening, and, owing to its shuttered windows, the light and air can be regulated at will, as with the shutter of a camera.

The bed, sheltered against two full walls, has colored sheets so that the mess is not noticed when the bed is unmade. Owing to the layout of this room (through shifting alignments), the doors are invisible from the interior.

In the part arranged as a studio are a writing table, metal chairs, a filing cabinet, a low hanging light diffuser of frosted glass, and a private terrace with a daybed.

This room has a small bookshelf; a bed with a plywood headboard against the wall, where there are built-in lamps, one in white and one in blue that dims to serve as a night light; a movable bedside table with two segments and a luminous watch face; electrical outlets for a kettle and bedwarmer; mosquito netting in transparent celluloid, the fabric of which extends along an extremely thin steel cable with a guy rope, which eliminates the heaviness and inelegance of ordinary mosquito netting. The linen cupboard below the window is placed at the height of the hand, so that the bottom can be reached effortlessly, without bending over. It is hung from the wall, which allows the tiled flooring underneath to be easily cleaned. Completing the furnishings for the dressing area are a waste basket, a stool, shelves, a washbasin, a disk for jewelry, and a dressing cabinet made of aluminum – a beautiful material providing agreeable coolness in hot climates.

The tile flooring is gray-black for the studio and gray-white for the room.

Although very small, the bathroom is fully fitted with useful accessories. Ventilation is assured by a slatted door, like the sleeping alcove in the large room, and by a large frame that opens above the bathtub. Above the doors are cupboards for suitcases to take advantage of the square meter of space taken up by the door. A step allows them to be reached easily.

A cupboard in the bathroom wall contains a shelf for shoes and dressing gowns (with a special system of drying racks), and a large cupboard for underwear and pajamas has a chamfered corner to facilitate ease of movement in the room.

The tub is an ordinary bathtub covered in an aluminum casing, which gives it an agreeable appearance and strikes a glistening note in the tone of ensemble. The bidet is covered with a seat of foam rubber. The toilet, located near both the

shielded by the entry canopy; it is ventilated through the roof.

The kitchen layout has been suggested by the customs of the peasant women of the region who prepare their meals outside during the summer and inside during the winter and bad weather. It can be transformed into an open-air kitchen by a partition made of glass panels that fold flat. When this partition is opened, the kitchen is nothing more than a paved alcove in the courtyard, with a coal store, a niche for wood, a washstand, an electric ice chest, a water softener, a zinc-covered cabinet for bottles, a folding table, and an oil-fired oven. Inside is another oven for the winter.

The Stair. – The stair has been built using the smallest possible dimensions, but with large, deep steps that are grooved to be comfortable underfoot. The stair shaft is much larger than the spiral staircase, so that the volume seems light and airy. Around the spiral stair, which serves like a stepladder, are a series of cupboards that are ventilated, lit, and accessible from both inside and outside. The light pours down through the glass shaft above, which provides access to the roof.

At this time we are studying certain cupboard units that are simple and convenient. We believe that the practice of using uniform and standardized cabinets everywhere is contrary not only to good taste but also to good sense. We will speak later of certain types of cupboard that are sufficiently simple in design, but infinitely more flexible and varied. At the same time we will discuss flexible and mobile partitions and wardrobes for clothing, treated in the logical manner of steamer trunks.

Lower Floor. – The guest room has been carried out with the essential concern of avoiding the mistral. Because the bed must be sheltered from the currents of air, a partition wall cuts off all air flow. The room comprises a studio and a dressing area with a lit ceiling. The lit mirror has a small satellite mirror that permits one to shave the nape of one's neck: a lamp is fixed at the center of the mirror, flaring so that all is lit equally, without shadows. There are drawers everywhere, external and internal, pivoting and sliding, to contain common objects. The guest room is independent, with doors leading directly to the garden and the terrace under the house. The bed is an ordinary divan, simply modified with a fixed headrest to be used during morning breakfasts. An off-center table has a tubular-steel base that can be adjusted to hold the breakfast tray at the desired height, and fits under the divan. An item of furniture with multiple drawers, shelves for books, and a writing desk can be closed up. A soft light, in white and blue, does not reach the eye directly. A small portable dressing table in leather and tubular steel has pivoting drawers. Above the door is a cubbyhole for suitcases.

We have tried to create the *smallest habitable cell.* Despite its extremely reduced dimensions, the maid's room provides a sufficient level of comfort. There is ease of movement, although the space has been strictly economized, and this room could serve as an example of all rooms for children and servants where one seeks only essential comfort.

The boiler room, storage and gardener's shed are equally independent.

Terraces and Gardens. – Paving crosses the entire garden up to the space under the house raised on *pilotis.* To give the garden greater intimacy, the side exposed to the wind has been closed off by a narrow storage space in corrugated sheet metal, where the gardener can store his tools. A reflecting pool, which would attract mosquitoes, has been avoided; instead there is a sunbathing pit with a sort of divan made of sloped paving stones, a tank for sand baths, a mirrored table for cocktails, and benches to either side for chatting. A small stair enables one to descend directly to the sea to bathe, fish, or sail.

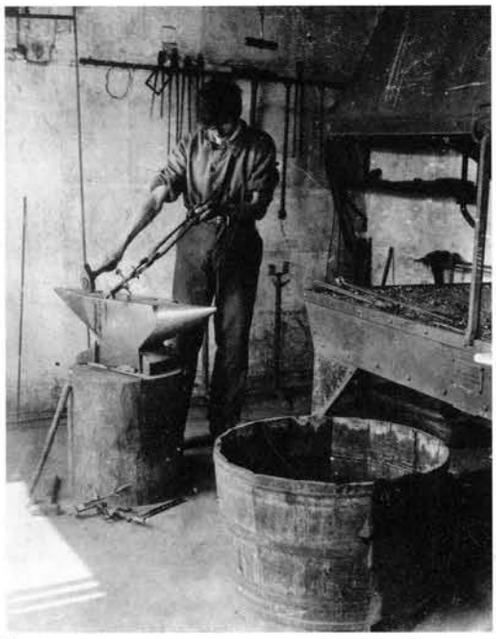
This very small house thus has, concentrated in a very small space, all that might be useful for comfort and to help indulge in *joie de vivre.* In no part has a line or a form been sought for its own sake; everywhere one has thought of *man,* of his sensibilities and needs.

[1] In the dining room, observe the very distinctive and comfortable form of the chair: one has removed one of the armrests to give greater liberty to the body, which can lean to one side and look or turn to the other without any discomfort.

Translator's note: Gray and Badovici begin their Description by qualifying two statements from Le Corbusier's *Vers une architecture:* "Architecture is the masterly, correct and magnificent play of masses brought together in light" and "the plan is the generator." Le Corbusier, *Towards a New Architecture,* trans. Frederick Etchells (New York: Payson and Clarke, Ltd., 1927), pp. 29 and 47. Gray and Badovici make a further reference to Le Corbusier's writings in relating the wardrobe with the steamer trunk. See Le Corbusier, *L'Art décoratif d'aujourd'hui* (Paris: Georges Crès et Cie., 1925), p. 98; *The Decorative Art of Today,* trans. James Dunnett (Cambridge, Mass.: MIT Press, 1987), p. 98. Le Corbusier originally published all of these arguments in *L'Esprit Nouveau* (1920–25), a periodical to which Gray subscribed.

Interview with Jean Prouve

4. Jean Prouvé with his father Victor in 1911.
5, 6. Sketches by Jean Prouvé for his course at the Conservatoire National des Arts et Métiers.
7, 8. Jean Prouvé apprenticed to Emile Robert, 1916-19.



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Jean Prouvé used to say of his father that he was one of those men whose mind and hands were closely linked, a complete artist who did not have to use any intermediary. Victor Prouvé was a very free spirit, with ideas in advance of his time; and he was in love with nature.

Jean Prouvé remembered that when he came out of school he used to run to his father's workshop. When Victor Prouvé was painting in the open air, during the two or three months of »holiday«, the children were always with him. Pencils and paper were always available, and that is probably how Jean Prouvé learned to draw. In this way, too, he learned »the important principles« and imbibed the spirit of the Ecole de Nancy: »industrial production for the widest possible public« ... »every object must be of the highest quality and a product of its time« ... »a man is put on this earth to create, never to imitate others« ... The importance of drawing inspiration from the study of nature: his father taught him to notice how a rose-thorn grows out of the stem ... these observations were the source of his idea of »twisting« sheet metal into forms of uniform strength at all points.

The 1914–18 war completely changed the life of the Prouvé family. Victor found it difficult to support his family by painting. The young Jean, who was passionately interested in aircraft and cars, had to give up his ambition to study engineering.

When he was very young his father had taken him to see a friend, Emile Robert, and when they left it appears he had said, »I want to be an ironsmith!« Some four years later he was apprenticed to Emile Robert.

Jean Prouvé in a conversation with Jean-Marie Helwig in 1982:
JP: »During the 1914–18 war, it became clear to my family that I would have to earn my living, because, as I think you know, there were seven children, and in war-time things were not easy for an artist. My father was helped by people who gave him decorating and painting work, but that was not enough to feed a family.

So at 16 I had to give up my studies; and, as I always say, they were going well, I was a good student; at the back of my mind I had the idea of becoming an engineer, a builder of things, and at that time I thought of machines because I loved mechanics; I loved aircraft, and could see myself as an aircraft constructor. I had no thoughts at all about building. Then, while I was trying to get started, to find myself an apprenticeship, my father took me to Paris, and we went to see Robert at his workshop, which was then in Enghien, a suburb of Paris. It was a small workshop employing only young men, because Robert, who was a sort of mystic, had lost all his children except one through illness; so he devoted himself to young people and spent all his time training apprentices.

Emile Robert came from the Berry; it was a tradition, most ironsmiths in the Parisian workshops came from there. He was a true ironsmith, a man of the trade, a skilful fashioner of iron who used the simple implements of the time – a hammer and an anvil, that's all.

He made wrought ironwork for buildings. At the same time as he was making artistically imagined wrought-iron figures – animals they were, and very good too, full of character; he was owner of a large concern in Paris, Borderel and Robert, a big metal-construction firm. But he never gave up working iron himself. When I knew him he was about sixty, sturdy, strong and, remarkably, still capable of working at the forge all day long. How did it all come to pass? He made contact with my father, and I wonder whether it wasn't through the articles my father wrote for, among other magazines, *Art et Industrie*, to which Robert also contributed examples of his work. Robert must have read my father's articles, and obviously they got in touch. They soon became very good friends, and Robert even asked my father to design some grills. There is an example in the Musée de Nancy, designed entirely by my father and forged by Robert. I can confirm that Robert made them himself, with his own hands; though it was very difficult work, it is marvellously done.

I was so pleased to see that there were six, seven, eight young men of my own age in the workshop at Enghien, that the matter was settled on the spot. Robert welcomed me to Enghien, and I lived in a room belonging to some local people, friends of Robert. At Robert's I learned to forge iron, and soon became his best worker. I was working with him all the time. And that's how my career as a metal-worker started. Obviously, when Robert entrusted a piece of work to me, what counted most with me was to complete it as quickly as possible. I got much faster than the others, and my work was none the worse for it. Robert appreciated that very much, so he gave me a lot of attention and a grounding in the whole trade of ironworking. I was then capable of forging anything, large or small; I could use the power-hammer, I did the work myself, with my own muscles; in those days I had muscles, because working with iron develops them. At that time, the working-day at Robert's was long ...

My apprenticeship came to an end when Robert said, ›It's time for you to work in a factory, and I suggest you take a job in my company.‹«
JMH: »That was not at the same workshop?«
JP: »No. It was a much larger firm in the rue Damrémont, in the 18th district of Paris, an area of industrial buildings and working-class dwellings.

I could not see any objections myself, but I was worried about the director, Monsieur Subes, who was much talked about in the ironworking world: he would do anything to get orders, and I didn't at all like the ironwork he produced. I wondered what I should be doing there. But I didn't want to disappoint Robert, so I went – though I only stayed a week. I'll tell you what happened. I was still a very young man; I arrived and was met by Subes. He spoke to me very unpleasantly, letting it be understood that I had been Robert's favourite pupil ... I didn't like that at all. Then he said, ›Well, it's agreed that we'll take you on, I'll get the foreman.‹ When the foreman I was to be put under arrived, Subes made a monumental mistake: he asked me to go outside while he spoke to the foreman; but the door was not properly shut, and at that time my hearing was very good. ›We're going to make that boy sweat a bit,‹ he said. ›We must show Robert that the boy can't have it easy, just because he thinks so highly of him. We must test him out.‹ ›This looks as if it's going to be fun!‹

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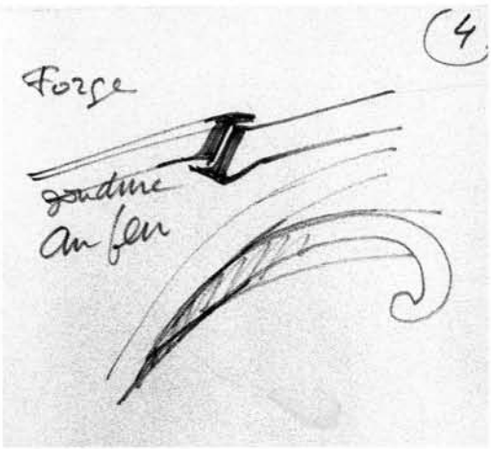

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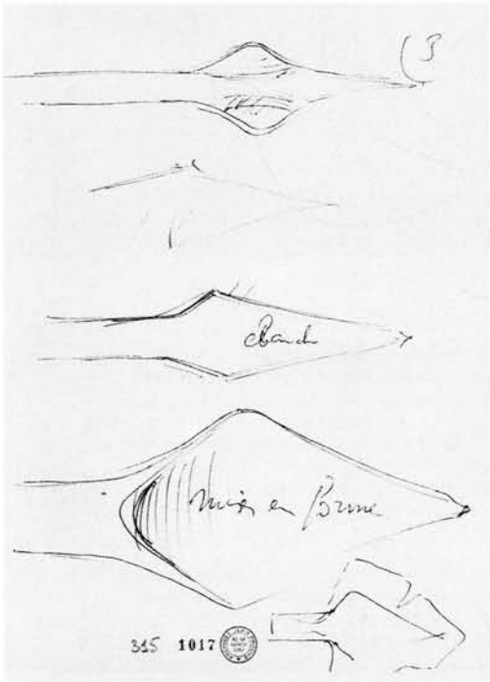

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I said to myself. I went down to the workshop, and, sure enough, they gave me a piece of work that was well beyond my physical strength, too heavy and too difficult; it was a test all right. But I took up the gauntlet and finished the job. At the end of the week I showed my work to the foreman, who said, ›I think we'd better let the boss see it,‹ because he was, himself, rather taken aback. We went up to see Subes. ›I congratulate you,‹ he said to me. ›I didn't think you'd be able to do it; we are going to make you part of the team.‹ For the first time in my life I acted quite pig-headedly. ›It's too late, Monsieur Subes,‹ I said, ›I'm getting out!‹ I went straight to the door and left, just like that. I don't know whether I even collected my wages.

I knew another ironsmith in Paris, called Szabo. He was of Hungarian origin. I crossed Paris on foot to knock at his door. He took me on at once. I worked two or three years for Szabo, who was also a quite exceptional ironworker. He had the physical strength of an animal, like today's body-builders. Muscles like balloons. We all worked with an ordinary hammer, but he used a sledge-hammer that weighed eight kilos. He was so astonishingly skilful that he could make needles with this eight-kilo hammer, which he held in his right hand. He did a lot of work for a number of architectural firms in Paris.

At this time I lived with the ironworkers, and I used to join them in a Paris bistro for a meal of fried fish. The only difference between them and me was that they drank at least three litres of red wine a day, whereas I didn't drink at all. This caused me problems, though, because an ironworker sweats so much that he has to replace the water-loss by drinking.

I got on very well with Szabo, whom I had to leave to do my military service. During this period I spent all day long with the workmen; and at that time the Parisian workman was really someone. I was a very serious young man, and lived my life according to the principles my father had instilled in me. I didn't run after the girls. I did my work and went back home. I lived alone in my father's studio in Paris, and I worked a twelve-hour day – twelve hours a day at the forge! It was a time when I lived the life of a workman during the day, and then, in the evening, mixed with important university people, friends of my father. There was this contrast between what we call the life of the people, and the other life of the intellectuals. But they were not ordinary intellectuals; they were people who were thinking about the future, almost all were socialists, making plans for human advancement, you can be sure.

This lasted until I set up my own workshop, when I returned from military service.

So I worked as a forger from 1917 until, probably, 1921, when I started military service. This includes the short period I spent in the Borderel and Robert factory, and the time, until I was 21, with Szabo ...

Then I went back to Nancy and, before I opened my workshop, I worked in the forge of the Ecole des Beaux-Arts. For a short while I looked after the young people studying there. This did not last long, because I very soon set up my workshop. For several years after opening it, I worked at the forge myself. I was not at all an office-type, nor a man for the drawing-board. I lived in the workshop, and I remember that ironsmiths and forge-workers used to wear a leather apron, to protect them from the sparks. For many years I wore the leather apron.«

Jean Prouvé's first workshop[8]

On the first of January 1924, Jean Prouvé moved into a workshop, 250 square meters and on two floors, at 35, rue du Général Custine in Nancy. His first collaborators were the Wolff brothers, who were ironsmiths, and Pierre Missey, a craftsman in wrought iron who had already worked with Prouvé at the Ecole des Beaux-Arts in Nancy. In conversation, Pierre Missey recalled[9] how »we both worked together« on the pieces produced at this early stage. He explained how forge-welding is done, how to forge an oak-leaf ... and he was able to tell me where to find some of the works of this period, such as the grill of a tomb in the Cimetière du Sud in Nancy (see no. 11), which he forged with Jean Prouvé.

A little later, other collaborators were taken on, among them the ironsmith Lefèvre, who became workshop foreman. The equipment was traditional: two forges, plus the forging tools and a few electrical machines such as drills and grinding machines.

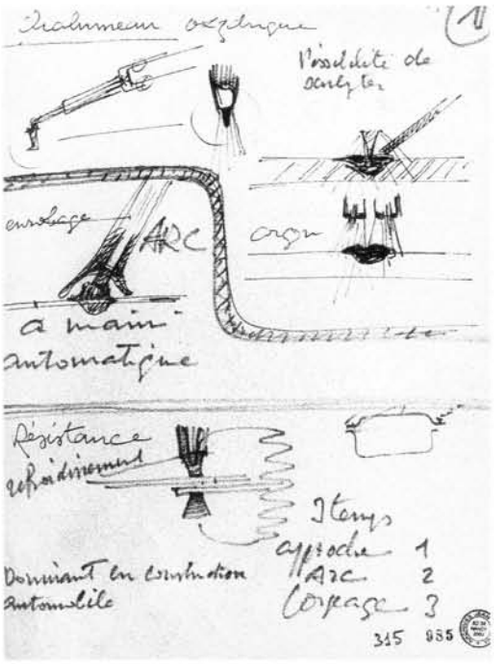
On his writing paper, he calls his workshop an »Ornamental and Wrought-Iron Works«, and offers to undertake »grills, hand-rails, balconies, chandeliers, etc.« From the start, moreover, he signed some of his work in wrought iron (see nos. 55 and 56). It is clear that Prouvé created some works, such as lamp stands and grills, according to his own ideas, but that others were made to the requirements of architects and clients (see nos. 17 and 26).

In 1982, Jean Prouvé spoke to Jean-Marie Helwig about this early period:
JMH: »... So the vocabulary, the tools and the techniques were all traditional. The same vocabulary, the same tools that Jean Lamour used, those of earlier centuries?«
JP: »Yes, indeed. It was Robert's wish to preserve the traditional skills of the ironsmith. In Robert's workshop, the oxy-acetylene welding-torch was unknown; we used forge-welding, which is a very difficult technique.

At Robert's, work meant knowing how to make a fire, knowing which lumps of coal to use for the furnace, and how to heat up the metal so that it was just right for soldering; not letting it become so overheated and liquid that it ran off into the furnace. I learned all about that. That was the knowledge Robert was preserving. But as soon as I went to Subes, who ran a workshop where all kinds of work was done – traditional pieces and, at the same time, metalwork that was Monsieur Subes' own speciality, a sort of lace-work entirely made with the welding-torch – there was no more forging of metal, just bending and torch-welding.

You could say that Subes used modern equipment. But he did not turn it to good account, because he used the welding-torch to make things in the old style.

Robert was against that, and so was I. That is why, during the considerable period in my own workshop, when I was making very different things from what they were making at Robert's – you've seen the photos, I believe; lamps, things like that – I think I can truly say that I was the only one forge-welding pieces in that way ... you mention the pressure-hammer at Robert's; it was not a pressure-hammer of thousands of tonnes, but what is called a tilt-hammer, with a pressure of two tonnes and worked by pressing a pedal; it uses a system



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of springs, and instead of holding the hammer in your hand, it is fixed to the pivot. It needs a light touch of the foot and some skill in turning the piece; and you have to learn to manage it very quickly, because it is very powerful – one blow too many, and the work is ruined. There was a tilt-hammer in Robert's workshop, but it was the one and only mechanical tool there.

At Szabo's, it was the same, exactly.«

JMH: »So it is a traditional piece of equipment in that it offers the same degree of manœuvrability as the hammer and tongs.«

JP: »Just so. Both Robert and Szabo refused to allow it to be modified in any way. It was the first piece of equipment I had at Nancy. The first equipment I bought consisted of a tilt-hammer, a forge and two anvils. My workshop was an ironsmith's workshop, with a complementary provision of vices, drilling machines, everything that allowed us to bring a mechanical element into our work. But the truth is that a real ironsmith pierces holes in the hot metal.«

JMH: »With a punch?«

JP: »With a punch. It was used a lot.You get a different structure from rolled metal, more resistant.

Obviously, whole grills were made, all the holes of which were forge-pierced.

Then one fine day, the light dawned on me. I said to myself, ›That's it. We must do something different. We've got to make use of modern methods of production.‹ So I moved over to construction, because that was essentially what I was interested in ...

And it came about very quickly. I took the view that craft production of small forged pieces was finished, and that it was necessary to move on to something else. If I thought like that, it was because I was living among people who thought like that; it was the ethos of the Ecole de Nancy.

So you see, a number of things came together at this point. Nothing is free, and one thing always depends on another. The important thing is to know how to make good use of the circumstances. I don't think I made a mistaken decision in completely changing the production of my workshop. That's why I installed what I believe was the first electric welding machine in Nancy. I discovered one day what could be achieved by electric welding and bought the equipment, which came from Switzerland ... I began to create works made possible by electric welding, that were only possible with electric welding, and I did more and more of this kind of work.«[10]

This very considerable investment in autogenous and electric-arc welding was made in 1926. A little earlier, in 1925, Jean Prouvé had enlarged the workshop by making use of the upper floor.

The J. Prouvé Collection contains drawings by himself and the designer, Mademoiselle Stieffel, a former pupil at the Ecole des Beaux-Arts. Handwritten on these early plans one finds, »Jean Prouvé, ironsmith«, or »Jean Prouvé, metalwork contractor«; sometimes a stamp, »Jean Prouvé, ironsmith«, is used; but we no longer find the words »ornamental ironwork«.

Further machinery was installed: machines for punching, trimming and grinding, extra welding equipment, and welding and cutting torches (1928/29); Rosefelder was put in charge of a small metal-polishing section that consisted of a polishing machine and lathe – they were used for the Magasins Réunis (see no. 83).

Jean Prouvé told us in 1982/83:

»I believe I was one of the first to use folded sheet-metal for building, and as I hadn't a plate-folding machine in my small workshop, I had to go and find one in the boiler-makers' workshops; they had been folding metal for a long time, but for tanks and containers for chemical products, etc.

By chance, I met in Baccarat the engineer of a firm, the name of which I don't remember – I don't even remember the engineer's name. He was interested in what I was doing and helped me with the plate-folding; that is to say, I got him to do the work with his machines and finished it off in my own workshop. The moment I moved to a new workshop, in 1930, the first thing I did was to buy a plate-folding machine, to fit myself up with metal-folding machinery.

That's more or less how things developed. Up to 1925, I was making things in isolation, not influenced very much by other people. I was a provincial; Paris was where everything was happening. From time to time I came across an architectural journal; I was not especially interested, but, nevertheless, that's how I discovered that Le Corbusier existed, that Mallet-Stevens existed, that there was a painter called Fernand Léger, etc .

One day, I got together a small collection of photos, and very tentatively – because I was shy, never blew my own trumpet, was always very careful what I said – I said to myself, ›I'll go and see those people, and perhaps they'll give me some work.‹

And the first person I went to see in Paris was Mallet-Stevens. I've already told you that story ...« (see no. 101).

It is probable that from 1925 onwards Jean Prouvé was aware of the work being done by the avant-garde. He showed two wrought-iron gates at the Exposition Internationale des Arts Decoratifs in Paris (see no. 23), and he certainly saw the Pavillon de l'Esprit Nouveau by Le Corbusier and Pierre Jeanneret, and Mallet-Stevens' Pavillon du Tourisme ... Jean Prouvé and his friends also exhibited with, and were active in, the Comité Nancy-Paris (Bignon/Coley, p. 28). His work was undoubtedly influenced by what the avant-garde was doing; we have only to look at the standard lamps and wall lighting (see nos. 45 to 70) – at the start they are wrought ironwork, but after two or three years become »lighting equipment« of the kind being produced by Chareau, Mallet-Stevens, Desny, Dufresne, Schenck ... Their designs, together with three centre lights by Prouvé, were published by G. Jeanneau.[11] This kind of production came to an end after 1931. About 1929, Prouvé published *Le métal,* which contained avant-garde works from outside France. We know that Prouvé became a member of the UAM in 1930, and that he exhibited at its first salon in Paris. On this occasion he saw the exhibition of the Werkbund and what the Bauhaus was making. He was a subscriber to *Moderne Bauformen*, as Jean-Marie Glatigny, who used to translate it for him from German, remembers.

About 1929 Jean Prouvé began to concentrate on the development of industrial products in folded sheet metal for the construction of buildings. He patented doors of curved plate, that exploited the elasticity of metal (see no. 170), movable partitioning (see no. 190), etc., products that, over the years, were the economic basis of the

20. Collaborators in the Jean Prouvé Workshops about 1932.
21. 50, rue des Jardiniers, Nancy.
22. The stamp of the Jean Prouvé Workshops Limited Company.
23. Title panel, used by the Research and Design Department in the 30s.

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23

ATELIERS JEAN PROUVÉ
NANCY

J. Prouvé Workshops – and are somewhat neglected in the literature. In the rue du Général Custine workshop, he also began to research and construct lift cages in sheet metal (see nos. 146 to 156).

This is the beginning of the period of folded metal; Prouvé has told us that he did not yet have a folding-machine and that he used one belonging to a firm in Baccarat. Emile Marchal remembers that metal sections, such as cover strips for partitioning, were drawn out in Paris (»we never drew them out ourselves«).

In addition to the machinery that Prouvé bought in 1929 – a lever shearing-machine and a flexible-shafted sanding and grinding machine (Bignon/Coley, p. 29) – »we obtained presses for making shoes« (Pierre Missey), and machinery, such as a plate-clamping machine, was constructed in the workshop (see no. 170.9). Tubing was curved by filling it with lead and then reheating it (Pierre Missey). The early pieces of furniture were prototypes or were produced as craft work in short runs (see nos. 114 to 123), and it needed highly skilled workers, such as Pierre Missey, to make them (which makes it difficult to reproduce them today). This furniture was made for Jean Prouvé's own home, for his sister and for friends of the family.

Jean Prouvé probably designed the furniture for the Cité Universitaire competition towards the end of the period of his first workshop; Pierre Missey remembers building the prototypes there (see no. 258).

Between 1927 and 1928, turnover doubled (Bignon/Coley, p. 35); for the large projects of 1928, Prouvé took on extra ironsmiths and metalworkers ... there was an office, run by Madame Huvé, a typewriter was bought, as well as a commercial vehicle. In 1928, the engineer André Schott (Prouvé's brother-in-law) became his partner, with a share in the business.

Jean Prouvé (1982):
»You can tell how rapidly my workshops developed, because very soon the premises in the rue du Général Custine became too small. In 1930, machinery had to be bought, so a company was set up. One of my brothers-in-law who was an engineer became a partner, and essentially it was a company made up of friends. It grew considerably between 1930 and the end of the war. There was work all the time, all the time ...«

The beginning of Jean Prouvé's second workshop

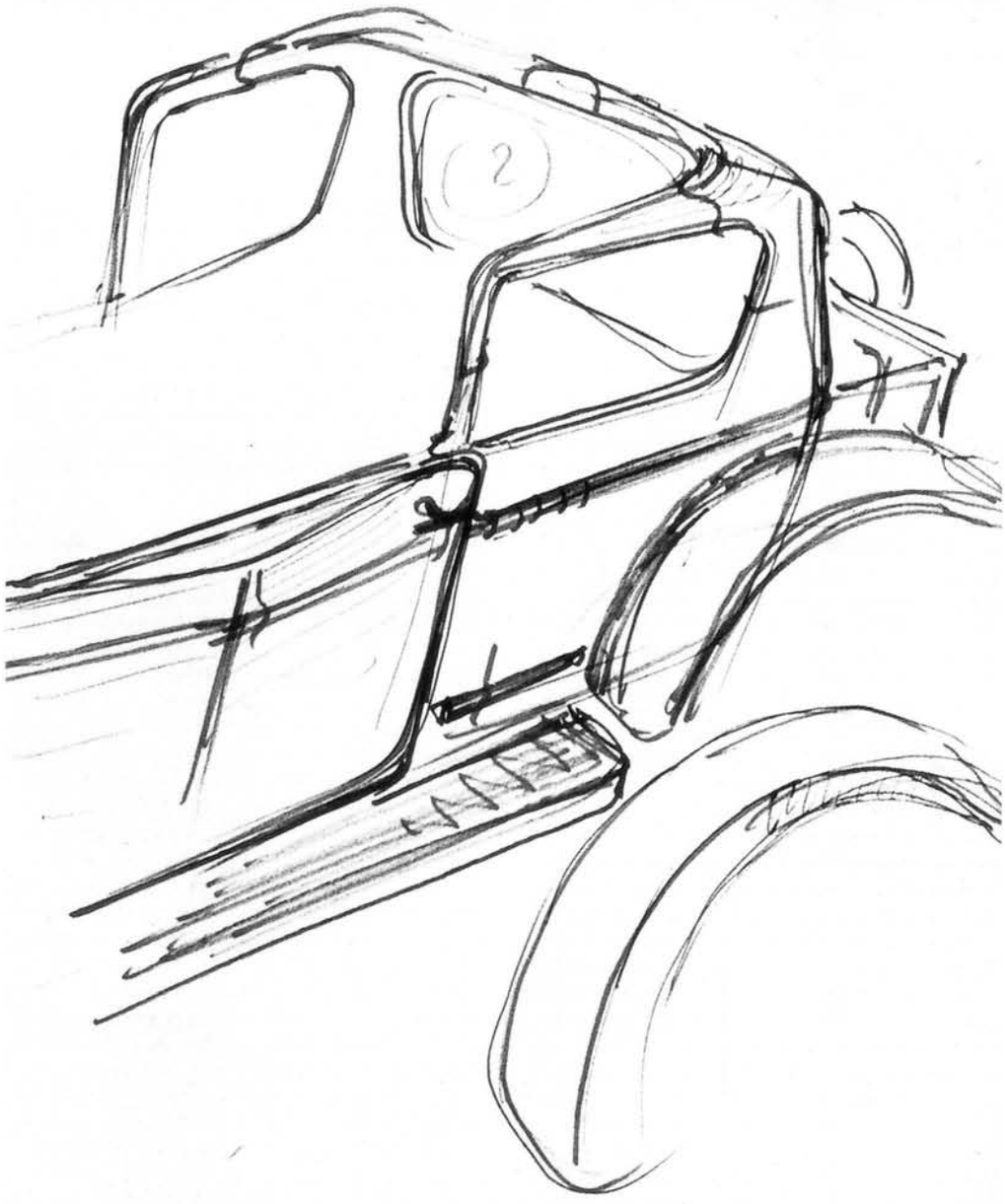
J. Prouvé Workshops, registered on 28 January 1931, moved into its new premises, a factory building, with 1265 square metres on the ground floor and 412 on the first floor, at 50, rue des Jardiniers, Nancy. Bignon and Coley have published a study that gives a detailed account of the rue des Jardiniers workshop: they describe its production organisation, the tools used, its layout, personnel, materials, management, partners and backers, the Jean Prouvé articles of association, its financial management, the influence of the management ... its losses and deficits, the division of responsibilities ... its setting-up ... the premises, its markets and orders, the kind of work produced, the volume of business, research ... (Bignon/Coley, pp. 43 – 54). It was in this workshop that the work was done for large projects such as the Garage Citroën in Lyons (see no. 181), the Hôpital Grange Blanche in Lyons (see no. 204), and the Palais du Gouvermnement Général in Algiers (see no. 205). Jean Prouvé engaged highly qualified personnel (he was lucky, because the economic crisis had led to a shortage of work). He set up a research and design unit, headed by Jean-Marie Glatigny (an excellent technician with foundry experience), that included Robert Feck (a former pupil of the Ecole Supérieure of Nancy), and Jean Boutemain, a metal tracer. They were all excellent draughtsmen (Jean-Marie Glatigny: »It was Jean Prouvé who taught us to draw«). Mademoiselle Stieffel, the designer, and the foreman, Lefèvre, did not follow in the move to the rue des Jardiniers; Barbier became foreman, and René Friot, who was engaged for the Grange Blanche project, stayed on in charge of the sheet metal operations. Emile Marchal (after studying as an aircraft mechanic) worked on the Paris projects, then in Algeria, and became head of machine tools. Soon about fourty people were being employed at the workshop. There is a photograph, taken on the Feast of St. Eligius (the patron saint of ironsmiths), that probably dates from 1932. Jean Boutemain, with the help of Pierre Missey, has named those of their colleagues who appear in it.

At the beginning a lifting-table press three metres wide was installed (using oil-pressure and prone to faults, it was replaced by several other folding-machines, and finally, in 1936, by a Peltz press). The workshops also had a small sheet-rolling mill, a machine for rolling bars, a bending-machine, and a drawing-out machine and drawbench. Emile Marchal recalls that sections were not drawn out in the workshop; plan 1559 ter of 25 July 1932 contains the sections to be drawn out for metal frames. A polishing room was set up on the first floor, though a nearby polishing works was also used; welding became the preferred technique for assembly, so appropriate equipment was installed, and very soon spot welding was introduced. Pierre Missey, ironsmith since the start and specialist in prototypes, was put in charge of the assembly team, and René Friot of the manufacturing team (Bignon/Coley, p. 49, give a list of the members of the two teams). Iron-forging, which was less important to Prouvé in the 1930s, was done by other ironsmiths. It was, according to Jean-Marie Glatigny, »the real beginning of sheet metal construction«.

Jean Prouvé (1982/83):
»That's the way things went; there was a constant need to renew the tooling. We needed the most up-to-date possible, because it gave us enormous advantages; all my collaborators appreciated that, because a modern tool made their work so much easier. They played the game; they were pleased to do so, and I was able to make things in a different way from others. It was difficult, because my board of directors did not completely agree with me.

The fact that I made all the changes in one sweep was certainly the result of what I saw happening in engineering. Aircraft engineering was an important influence. Automobile engineering rather less so, because I was working thin plate before Citroën; before Citroën introduced its light 11 CV, I had invented, in my workshop, girders in thin plate, and was using electric spot welding; the spot welding machine I bought was one of the first

[1] Paper by Renzo Piano, written for the Association of the Friends of Jean Prouvé, no date, AJP-US.
[2] Norman Foster in: *Jean Prouvé, cours du CNAM 1962 to 1962*, J.-P. Levasseur, Paris 1984.
[3] Joseph Belmont in: *Jean Prouvé, meubles 1924–53*, exhib. cat. 1989.
[4] *Jean Prouvé, une architecture par l'industrie*, 1971, p. 142.
[5] Conversations with Prouvé: Helwig 1982/83, AJP-US.
[6] Conversations with Jean-Marie Glatigny, René Friot and Pierre Missey.
[7] Conversation with Prouvé: Helwig, 9 November 1982, AJP-US; Madeleine Prouvé: *Victor Prouvé*, 1958; Henri Claude: »Jean fils de Victor: l'Ecole de Nancy«, in: *Jean Prouvé, constructeur*, monograph by the Centre Georges Pompidou, 1990, pp. 93–99.
[8] Bignon and Coley, *Jean Prouvé entre artisanat et industrie, 1923–1939*, Nancy, 1990, pp. 25–41.
[9] Conversation with Pierre Missey, 1989.
[10] Conversation with Prouvé: Helwig, 9 November 1982, AJP-US.
[11] G. Jeanneau: *Le Luminaire*, Editions d'Art Ch. Moreau, about 1930.



24. Esquisse de Jean Prouvé pour son cours au Conservatoire National des Arts et Métiers.

24. Sketch by Jean Prouvé for his course at the Conservatoire National des Arts et Métiers.

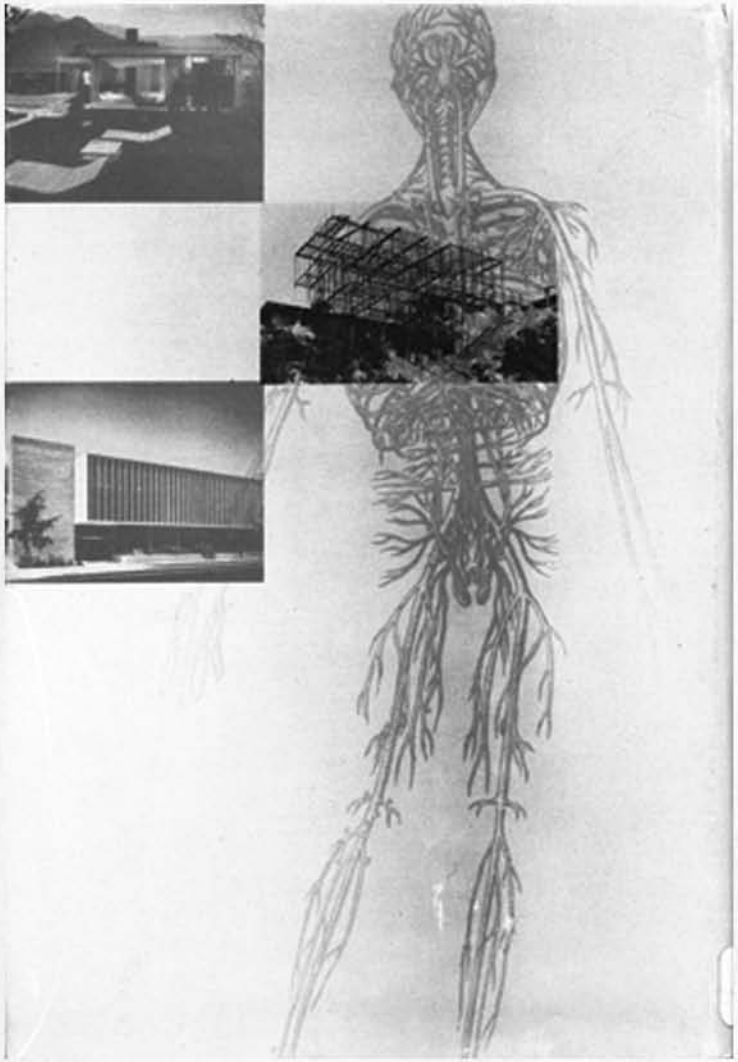
24

in Nancy. I think I was naturally influenced by the passionate interest I had in aeronautical engineering, and it led me to ask myself why such techniques should not be used in building construction. I had the idea very suddenly! Why isn't building construction developing in the same direction as automobile and aircraft construction? Why do the building methods of the Middle Ages still persist? I had already realised that construction was no longer genuinely medieval, but faked, and that they were beginning to create a decoration and an architecture that I did not like. That was very clear to me.«

Prototypes and large-scale models played an important role; Prouvé's working method - sketch, prototype, modifications, then construction plans – predominated. Jean-Marie Glatigny remembers that Prouvé often bypassed the research and design unit and brought sketches straight into the workshop. Prototypes were shown to architects and clients, and, since it was not then possible to make calculations for sheet metal constructions, models were submitted to resistance and deformation tests. At a later date, joints were tested for water-tightness. I asked Jean Prouvé's former collaborators how he controlled product quality, and was told that he seldom went away on journeys, and that each day he made a point of speaking to every designer and workman. In his workshops there was an exceptional atmosphere that I have described elsewhere.

It was in the rue des Jardiniers workshop that, a little later, Jean Prouvé and his collaborators designed and manufactured the first buildings in folded sheet steel, such as the Club d'Aviation of Buc, the Maison du Peuple at Clichy, as well as furniture; all of which will be the subject of the second volume of this Catalogue.

Richard Neutra, Survival Through Design



The NATURAL ENVIRONMENT IS DOCTORED UP CONTINUOUSLY and warped by the acts of the human brain.

1

Nature has too long been outraged by design of nose rings, corsets, and foul-aired subways. Perhaps our mass-fabricators of today have shown themselves particularly out of touch with nature. But ever since Sodom and Gomorrah, organic normalcy has been raped again and again by man, that super-animal still struggling for its own balance. There have been warners, prophets, great floods, and new beginnings.

What we here may briefly call *nature* comprises all the requirements and characteristics of live organisms. This entire world of organic phenomena is, in the escapades of our still obvious immaturity, often treated against 'the natural grain' and contrary to the 'supreme plan'—that of biological consistency and requirement. In former ages it was a sin to do this and for such failings the deity threatened to liquidate the sinners. We may now have dropped—perhaps too carelessly—the moral accent. Yet to us, too, the issue is still one of survival by virtue of wholesomeness, or damnation and death through our own default.

In human design, we could conceivably see *organic evolution continued*, and extending into a man-shaped future. At any rate, that phenomenally intensive development in the

multi-layered cortex of the human upper brain has not yet with certainty been proved a blind alley or a dismal failure. To be sure, this distinctly human brain harbors trouble, but it also may furnish some as yet untried survival aids. We have been laggards in calling upon all our potential powers and resources to arrange for us in a bearable manner an individual and communal living space. The toxic trash piles of our neglects and misdeeds, old and fresh, surround us in our physical environment. The confused wreckage of centuries, unrelated to any current practical purpose, is mixed in a most disturbing manner with our often feeble, often arbitrary, attempts at creating order.

Organically oriented design could, we hope, combat the chance character of the surrounding scene. Physiology must direct and check the technical advance in constructed environment. This setting of ours is all powerful; it comprises everything man-made to supply man, from the airy storage compartment of our toothbrush to the illumination of a speedway interchange, or of the neighborhood day-care center for toddlers.

A great deal of what has been vaguely called beauty will be involved in this proposed new and watchful scrutiny of man-made environment. It will come into question perhaps far more often than anybody could imagine in our current drab disorder. But the sort of beauty we speak of here will have given up its now too precarious grounds of self-defense. Designers will recognize that gradually but surely they must underbuild their proposals and compositions with more solid physiological foundations rather than with mere speculative conversation or sales talk. An eternal residuum of mystery may always lie deeply buried in this field, and yet the realm of research, testing, and provability increases from day to day.

All our expensive long-term investments in constructed environment will be considered legitimate only if the designs have a high, provable *index of livability*. Such designs must be conceived by a profession brought up in social responsibility, skilled, and intent on aiding the survival of a race that is in grave danger of becoming self-destructive.

Design is the cardinal means by which human beings have long tried to modify their natural environment, piecemeal and wholesale. The physical surroundings had to be made more habitable and more in keeping with rising aspirations. Each design becomes an ancestor to a great number of other designs and engenders a new crop of aspirations.

There were many failures in the past. Cities such as Rome have been called eternal only to become monuments, less of stability than of a continuing need for being remade. Rome and many of its buildings have been cruelly rehandled by inner and outer barbarians. The Eternal City bears striking testimony to the shipwreck of a multitude of plans and designs that have forever remained frustrated fragments. In the present, things may be different from what they were in the past, perhaps, but certainly not better. The controversial, calamitous character of contemporary towns, from 'modern' Mexico, Milan, Manila, back to Middletown, U. S. A., is known to all of us when we but cross the street from our office building to where we have parked the car.

Through the mental work of design, which is supposed to improve our lives, the race appears generally to stray farther and farther from the natural scene. The paradisical habitat of earliest man is considered a myth today and his natural situation may originally have posed him harsh enough problems. Yet those of our man-designed, man-constructed environment are often more trying and more severe tests to our natural resistance.

Man's own cramped-together creations, anything from underground sewage systems and subways to a badly hemmed-in sky overhead, irritatingly criss-crossed by a maze of electric wires, should not prove as inescapable as fate. Lightning and the plague, once so formidable, have been countered by proper measures; must we then here find ourselves helpless? Must we remain victims, strangled and suffocated by our own design which has surrounded us with man-devouring

metropolises, drab small towns manifesting a lack of order devastating to the soul, blighted countrysides along railroad tracks and highways, studded with petty 'mere-utility' structures, shaded by telephone poles and scented by gasoline fumes?

Design, the act of putting constructs in an order, or disorder, seems to be human destiny. It seems to be the way into trouble and it may be the way out. It is the specific responsibility to which our species has matured, and constitutes the only chance of the thinking, foreseeing, and constructing animal, that we are, to preserve life on this shrunken planet and to survive with grace.

Such survival is undoubtedly our grand objective, according to an innate pattern of feeling. It is a matter of urgent concern to everyone—from the loftiest philosopher to the most matter-of-fact businessman. Design to contribute to survival of the race is more than design as a long-hair luxury or as a lubrication of bigger and better trade.

Never have the opportunities for general and integrated design on a world-wide scale been as breathtaking as they are today. The Second World War has left huge areas of destruction in its wake but promptly a clamor rose, from Le Havre, France, to Agana, Guam, that things should be rebuilt in the 'old way.'

Yet pitiful attempts at resurrection of what is bygone are not the best we can do to honor the past. Also, naïve parochial outlook needs supplementation by global forethought, experience, and contemporary know-how. With all sincere respect for regionalism, there does exist now a cosmopolitan 'joint responsibility' for reconstruction anywhere. Human planning cannot really remain compartmental or sectional in an age of mutually braced security. Vast regions, which were formerly colonial, are awakening to their own contemporary participation with needs and supplies enormously stepped up. Technological progress in advanced centers is spreading and forcing a changed way of life even on the far-away, backward portion of the globe. And under the pressure of this

progress if it is to be integrated, conscientious design is needed everywhere.

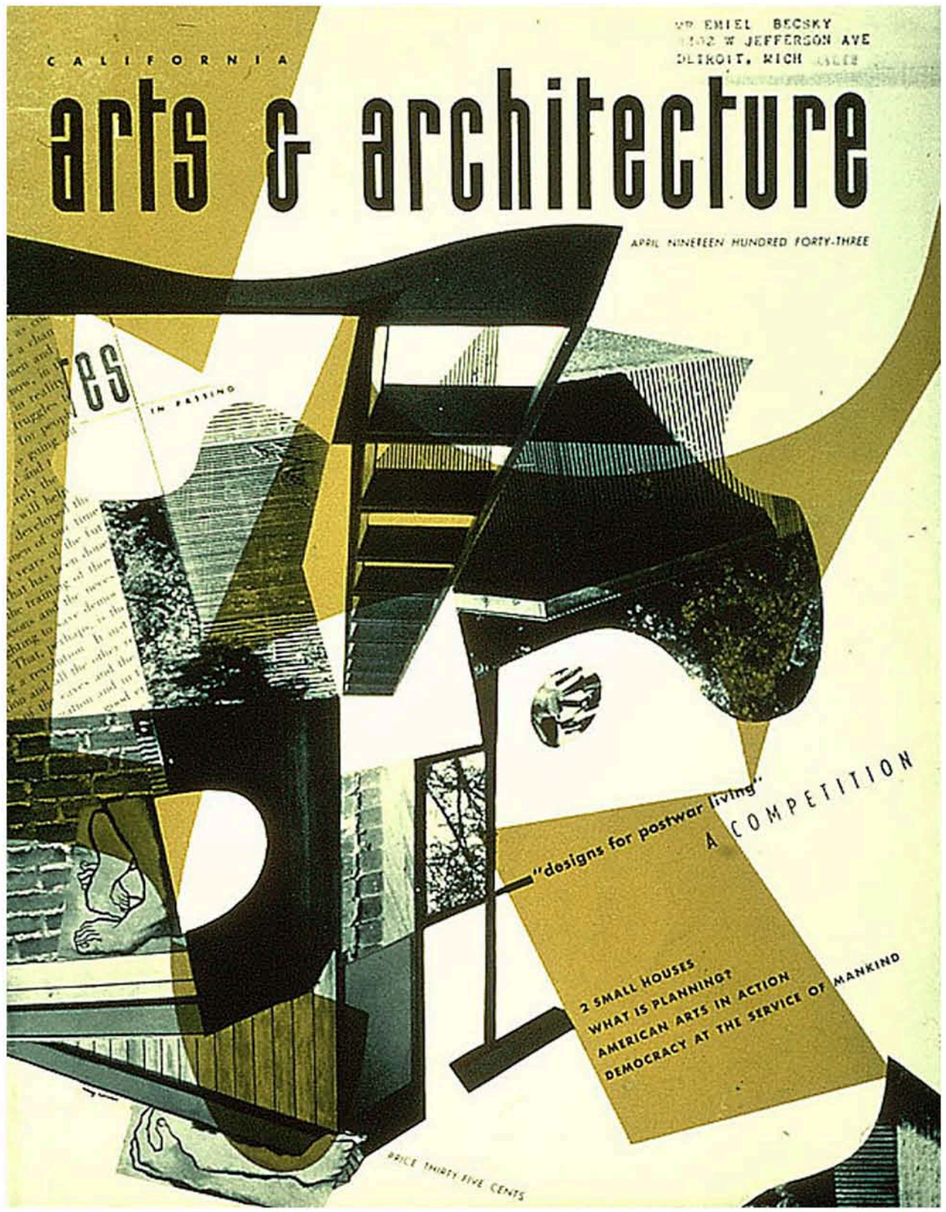
What sort of design? What are its governing principles and on what objective foundations can it be based? Is there anything to rely on behind all that bewildering multiform activity of ours? Is there anything which eloquent philosophers could put into words?

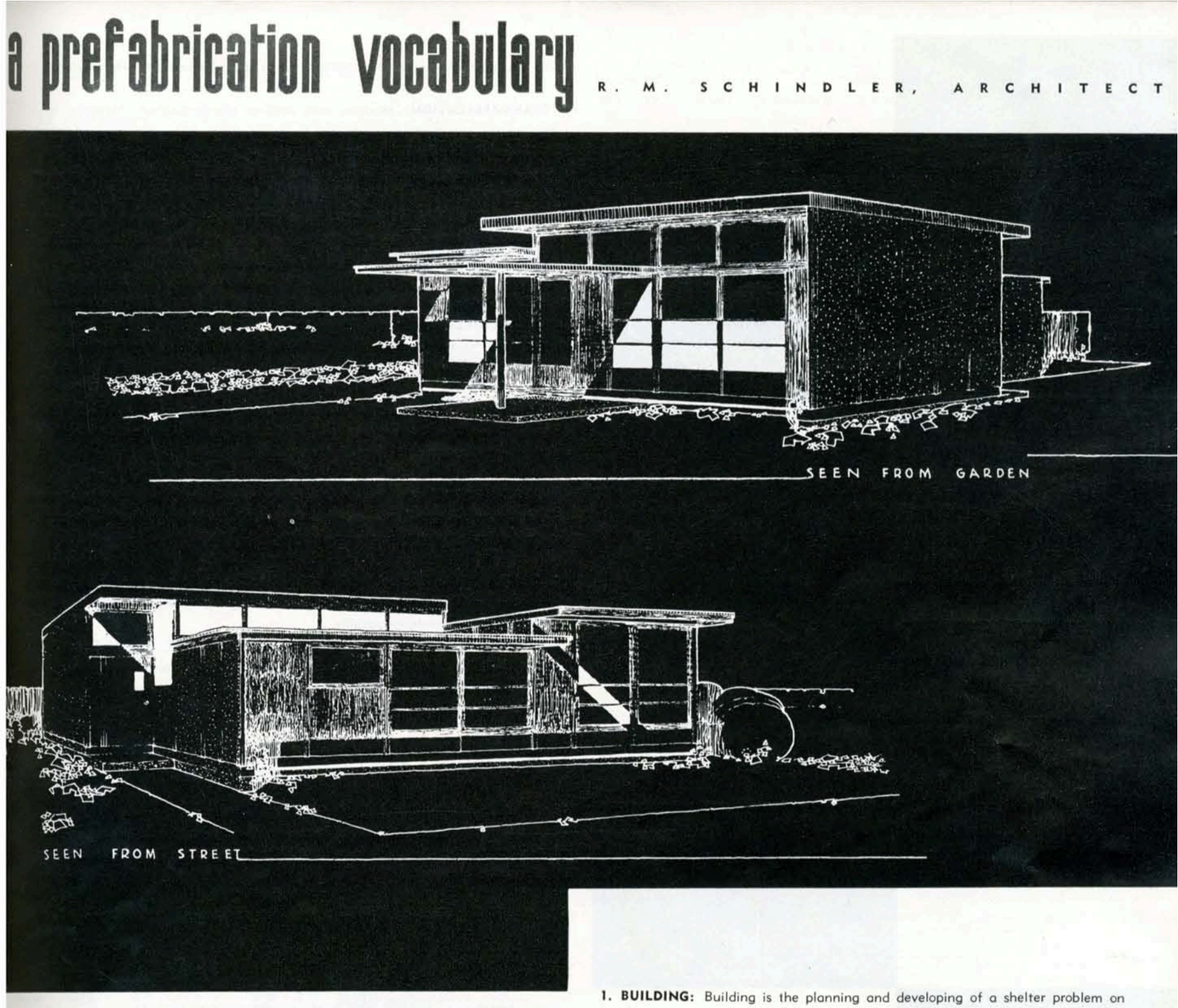
The writer has long felt tempted to put into words the fact that at this day and age no speculative philosophy, no deductive method alone, no talking-it-out can yield us all the principles of design. In our time new instruments and obligations have come to us from research penetrating into life's performance. Physiology is a pursuit and a science which opens the door to broad and intensive application. We begin to wield tools which will enable us to do the patient spadework which must be done. It will be fascinating because it is so novel.

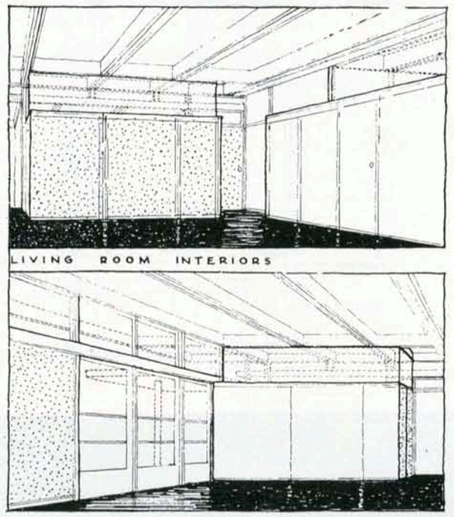
With knowledge of the soil and subsoil of human nature and its potentials, we shall raise our heads over the turmoil of daily production and command views over an earth which we shall have to keep green with life if we mean to survive—not cramped full with all the doubtful doings of a too thoroughly commercialized technology. Tangible observation rather than abstract speculation will have to be the proper guide. And drifting will no longer do.

Rudolf Schindler, “A Prefabrication Vocabulary”
Charles Eames, “City Hall”

California Arts and Architecture Magazine, 1943
(Cover Design by Ray Eames)







1. BUILDING: Building is the planning and developing of a shelter problem on the basis of a sensitive response to the conditions of the locale, the time, the occupant, and the available material.

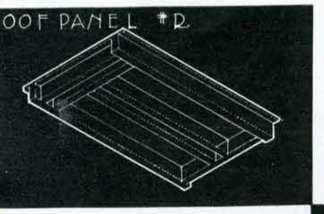
2. PREFABRICATION: Any brick is a prefabricated building unit. However, modern technique and transportation helps us to respond to an old tendency in building construction—to use increasingly larger building units. This urge ends in absurdity and completely eliminates "building" if we propose to deliver the whole house ready-made.

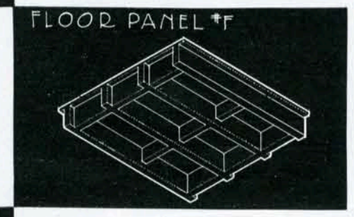
3. PURPOSE: Intensified prefabrication transmits the bulk of building work into the factory. The consequent increase of efficiency and the use of machinery reduces COSTS and furnishes a better product.

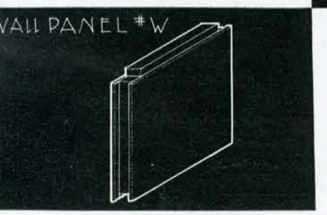
4. INDIVIDUALIZATION: The system shall permit individualization of house and garden. Unless a personal relation can be established between house and occupant, both will become meaningless cogs in a social machine without cultural possibilities. Such personal relationship insures maintenance. Prefabricated systems which confine adaptability to wall panels under a standard roof, limit development of the exterior too much to be acceptable. No rabbit hutch housing.

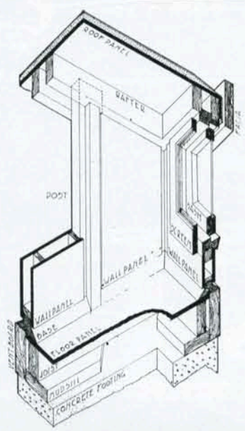
5. PRODUCTION: The market does not equal the one of the automobile. Therefore, the system should not require excessive investments in SPECIAL machinery

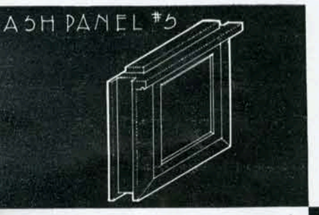
the panel-post construction

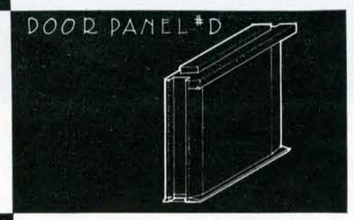


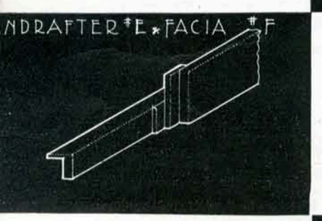


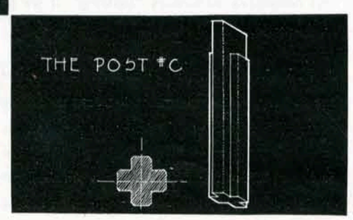












ABOVE: BASIC UNITS OF PREFABRICATION SYSTEM

which would tend to over-concentrate production and increase transportation costs.

6. STANDARDIZATION: Machine work requires standardization. However, to safeguard life, only fractional units shall be standardized. The machine is the only tool which may produce units of such precision that they may be assembled freely and assure complete individualization of the end product.

7. TRANSPORTATION: Building units shall permit easy packaging and shall be light in weight. Heavy lifting equipment to handle them shall not be necessary. Size of package is limited by loading space of standard truck.

8. FIELD WORK: Only excessive standardization will eliminate field work completely. Sensible prefabrication will require that an occasional cut or bore be made on the job. This will be more efficient than to make, list, and ship special units for minor differences.

9. SIMPLICITY: It shall not be necessary to provide specially trained erection crews. The assembly shall not require superhuman precision. On the contrary, the units shall compensate slight irregularities in fabrication and erection.

10. SPEED OF ERECTION: Important only for emergency housing projects. The individual owner does not require a house overnight. Building his house is one of the great stimulating experiences in man's life.

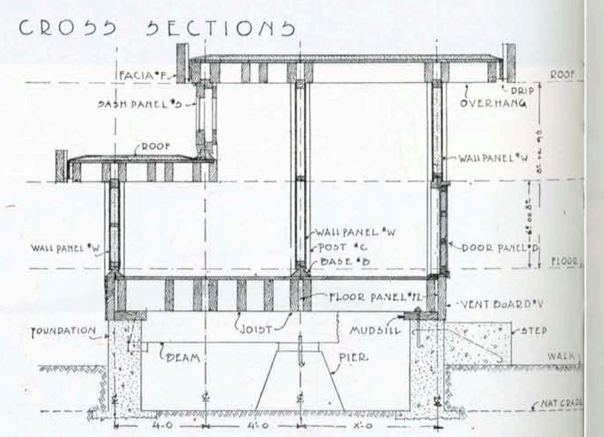
11. REGULATIONS: The system shall be subject to all standard regulations of the various local building ordinances. Stresses shall be below permissible maximums, earthquake resistance possible.

12. CLIMATIC CONDITIONS: It shall be possible to adapt the system to various climatic conditions. Uniform weather resistance would be wasteful in milder climates.

13. SOIL CONDITIONS: Footings must be free to conform to local conditions and experiences.

14. BUILDING PLAN: The Units shall permit the execution of any building plan. The majority of the prefabricated systems used for the recent war housing were restricted to the execution of only one plan. The "knock-down" house is not suitable for peacetime use.

15. MODULES: All dimensions horizontal and vertical shall be multiples of a



basic module.

16. FLEXIBILITY: The system shall permit additions and subtractions of partitions and rooms, and the change of size and location of all openings at any time. This demand will eliminate the "stressed skin" constructions, since alterations of this kind would upset their structural system.

17. SALVAGE VALUE: Units shall be demountable and reusable at any time. However, since alteration work will be only a small percentage of the field work, it shall not be necessary to use bolted connections throughout. Some hidden nailing may reduce erection cost sufficiently to compensate for a small increase in alteration costs.

18. CONSTRUCTION JOINTS: No attempt shall be made to conceal the joints. They are a natural consequence of a unit construction and as such shall become an architectural feature. All attempts of the "knock-down" systems to simulate monolithic construction will end in failure. Articulated joints will facilitate alterations and repairs.

19. WEATHER-PROOFING: All caulking, etc., necessary to tighten joints shall be inconspicuous but permanently accessible and renewable without marring the finish of the building.

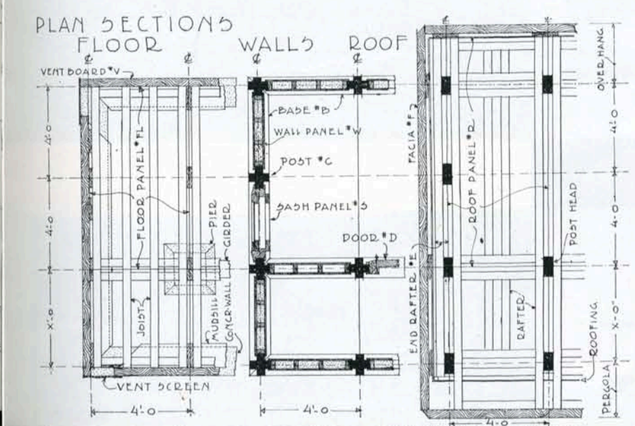
20. VERMIN-PROOF: All hollow spaces within the construction shall be factory sealed or permanently accessible.

21. MECHANICAL EQUIPMENT: Heating, plumbing, and wiring systems shall be installed after building is erected. They shall be permanently accessible for repairs, alterations, and modernization. Their aging is the prime source of building depreciation.

22. THE UNITS: No wasteful attempt shall be made to create an artificial similarity between units serving different functions. Wall, floor, and roof panels need to be designed and surfaced differently to satisfy their use.

23. MATERIALS: If units are made of standard materials (wood, etc.) they shall utilize commercial sizes without waste.

24. THE POST: The contemporary house is not conceived as a box shape with large areas of solid walls. The prominence of its openings is its main architectural



PANEL-POST CONSTRUCTION (SEE PATENT APPL.) R.M. SCHINDLER ARCH

character. The only system of construction which will give both openness and flexibility is a skeleton construction. Therefore, all systems using structural wall units are inadequate. All structural loads shall be carried by POSTS separated by no structural interchangeable panels or openings.

25. THE BASE: The floor base shall form a dust-proof floor edge in all rooms and shall serve as a spacer for the posts.

26. THE WALL UNIT: Not being a structural member, it may be executed of a number of materials such as plywood, boards, plastics, metals, etc. Only a few units in each house may have to be reinforced to withstand lateral forces. (Earthquake resistance.)

27. THE OPENINGS: Sash and doors are factory hung and finished in frames which fit between the posts like wall units. Windows may be of any height and may be multiplied to attain any desired width.

28. TRIM: No trim, cover strips, or bases shall have to be installed at the time of building.

29. THE ROOF: Roof slopes are the necessary consequence of old-fashioned roof coverings applied in small units. Modern technique permits a continuous roof-skin which allows dead-level application. Sloping roofs shall be eliminated to simplify design and erection.

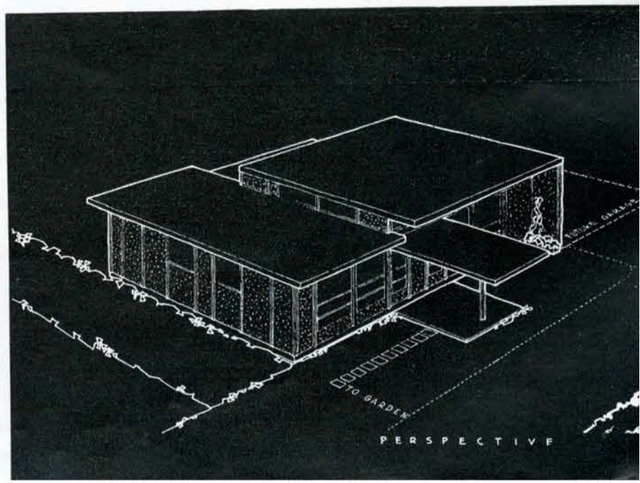
30. BUILT-INS: Closets, cupboards, and cabinets shall be prefabricated units.

31. FINISH: All units shall be factory finished. Touching up service for minor damages may be necessary after erection. However, it shall not be made impossible to change color and finish after erection if necessary.

32. SPACE FORMS: It shall be possible to build rooms of varying heights to permit architectural articulation in the house. Since real contemporary work is "space architecture," this requirement is basic for our architectural development.

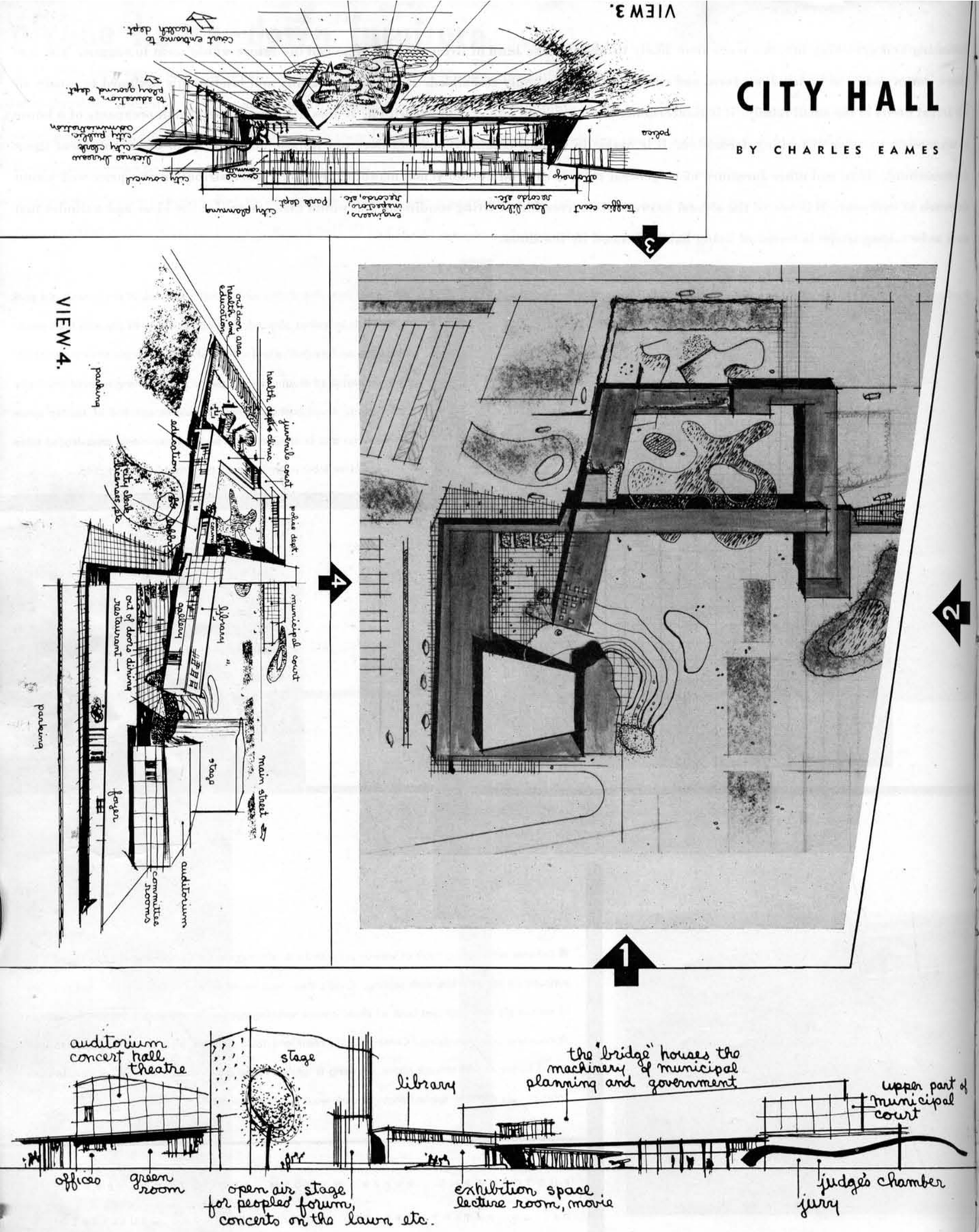
33. CLERESTORY: It shall be possible to vary roof heights to allow architectural articulation of the exterior. The possibility of clerestory windows is essential for adequate ventilating and sunning of all rooms.

34. "PANEL-POST CONSTRUCTION": This construction scheme shall fulfill all specifications outlined above and introduce a new building material for unlimited use—the PREFABRICATED "PANEL-POST" UNIT.



CITY HALL

BY CHARLES EAMES



MATERIAL COURTESY ARCHITECTURAL FORUM

"In a typical American community with 70,000 people, about 27,000 are registered voters.

In 1943 only 12,000 voted in a municipal election. WHY?

Among the several important reasons:

A lack of facilities by which people can educate themselves to understand the techniques of government.

A city government should—must—be housed as the center of a mutually cooperative enterprise in which:

THE GOVERNMENT TALKS TO THE PEOPLE.

AND THE PEOPLE TALK TO THE GOVERNMENT.

The administration of government is the business of the people. The obligations of the people in a democracy consist not only of an exercise of franchise, but participation in, and active direction of the rules or laws by which the government exists. The city hall must properly be considered the heart of any community, the house of government. A building in which provision is made not only for the administration of rules and regulations, but a building which must contain facilities for the expression of the *idea* of government, which is never static and which can never be complete without the direct participation of the people who create it. It should be impossible to think in terms of the juvenile court without thinking in terms of the children's clinic, without thinking in terms of a Board of Education. Such a Board of Education can best function through activities within the house of government itself by presenting in active cooperation with all departments: exhibitions, motion pictures, study and lecture groups, open forums

TO THE END THAT

WHEN THE GOVERNMENT TALKS TO THE PEOPLE AND THE PEOPLE ALK TO THE GOVERNMENT, IT IS ONE AND THE SAME VOICE."

In the Nature of Materials: A Philosophy
Frank Lloyd Wright

Our vast resources are yet new; new only because architecture as "rebirth" (perennial Renaissance) has, after five centuries of decline, culminated in the imitation of imitations, seen in our Mrs. Plasterbuilt, Mrs. Gablemore, and Miss Flat-top American architecture. In general, and especially officially, our architecture is at long last completely significant of insignificance only. We do not longer have architecture. At least no buildings with integrity. We have only economic crimes in its name. No, our greatest buildings are not qualified as great art, my dear Mrs. Davies, although you do admire Washington.

If you will yet be patient for a little while—a scientist, Einstein, asked for three days to explain the far less pressing and practical matter of "Relativity"—we will take each of the five new resources in order, as with the five fingers of the hand. All are new integrities to be used if we will to make living easier and better today.

The first great integrity is a deeper, more intimate sense of reality in building than was ever pagan—that is to say, than was ever "Classic." More human than was any building ever realized in the Christian Middle Ages. This is true although the thought that may ennoble it now has been living in civilization for more than twenty centuries back. Later it was innate in the simplicities of Jesus as it was organic 500 years earlier in the natural philosophy, Tao (The Way) of the Chinese philosopher, Laotze. But not only is the new architecture sound philosophy. It is poetry.

Said Ong Giao Ki, Chinese sage, "Poetry is the sound of the heart."

Well, like poetry, this sense of architecture is the sound of the "within." We might call that "within," the heart.

Architecture now becomes integral, the expression of a new-old reality: the livable interior space of the room itself. In integral architecture the *room-space itself must come through*. The *room* must be seen as architecture, or we have no architecture. We have no longer an outside as outside. We have no longer an outside and an inside as two separate things. Now the outside may come inside, and the inside may and does go outside. They are of each other. Form and function thus become one in design and execution if the nature of materials and method and purpose are all in unison.

This interior-space concept, the first broad integrity, is the first great resource. It is also true basis for general significance of form. Add to this for the sake of clarity that (although the general integration is implied in the first integrity) it is in the nature of any organic building to grow from its site, come out of the ground into the light—the ground itself held always as a component basic part of the building itself. And then we have primarily the new ideal of building as organic. A building dignified as a tree in the midst of nature.

This new ideal for architecture is, as well, an adequate ideal for our general culture. In any final result there can be no separation between our architecture and our culture. Nor any separation of either from our happiness. Nor any separation from our work.

Thus in this rise of organic-integration you see the means to end the petty agglomerations miscalled civilization. By way of this old yet new and deeper sense of reality we may have a civilization. In this sense we now recognize and may declare by way of plan and building—the *natural*. Faith in the *natural* is the faith we now need to grow up on in this coming age of our culturally confused, backward twentieth century. But instead of "organic" we might well say "natural" building. Or we might say integral building.

So let us now consider the second of the five new resources: glass. This second resource is new and a "super-material" only because it holds such amazing means in modern life for awakened sensibilities. It amounts to a new qualification of life in itself. If known in ancient times glass would then and there have abolished the ancient architecture we know, and completely. This super-material *glass* as we now use it is a miracle. Air in air to keep air out or keep it in. Light itself in light, to diffuse or reflect, or refract light itself.

By means of glass, then, the first great integrity may find prime means of realization. Open reaches of the ground may enter as the building and the building interior may reach out and associate with these vistas of the ground. Ground and building will thus become more and more obvious as directly related to each other in openness and intimacy; not only as environment but also as a good pattern for the good life lived in the building. Realizing the benefits to human life of the far-reaching implications and effects of the first great integrity: let us call it the interior-space concept. This space interior realization is possible and it is desirable in all the vast variety of characteristic buildings needed by civilized life in our complex age.

By means of glass something of the freedom of our arboreal ancestors living in their trees becomes a likely precedent for freedom in twentieth century life, than the cave.

Savage animals "holing in" for protection were more characteristic of life based upon the might of feudal times or based upon the so-called "classical" in architecture which were in turn based upon the labor of the chattel slave. In a free country, were we ourselves free by way of organic thought buildings might come out into the light without more animal fear; come entirely away from the pagan ideals of form we dote upon as "Classic." Or what Freedom have we?

Perhaps more important than all beside, it is by way of glass that the sunlit space as a reality becomes the most useful servant of a higher order of the human spirit. It is first aid to the sense of cleanliness of form and idea when directly related to free living in air and sunlight. It is this that is coming in the new architecture. And with the integral character of extended vistas gained by marrying buildings with ground levels, or blending them with slopes and gardens; yes, it is in this new sense of earth as a great human *good* that we will move forward in the building of our new homes and great public buildings.

I am certain we will desire the sun, spaciousness, and integrity of means-to-ends more year by year as we become aware of the possibilities I have outlined. The more we desire the sun, the more we will desire the freedom of the good ground and the sooner we will learn to understand it. The more we value integrity, the more securely we will find and keep a worthwhile civilization to set against prevalent abuse and ruin.

Congestion will no longer encourage the "space-makers for rent." The "space-maker for rent" will himself be "for rent" or let us hope "vacant." Give him ten years.

These new space values are entering into our ideas of life. All are appropriate to the ideal that is our own, the ideal we call Democracy.

A new reality: glass

A resource to liberate this new sense of interior space as reality is this new qualification called glass: a super-material qualified to qualify us; qualify us not only to escape from the prettified cavern of our present domestic life as also from the cave of our past, but competent actually to awaken in us the desire for such far-reaching simplicities of life as we may see in the clear countenance of nature. Good building must ever be seen

as in the nature of good construction, but a higher development of this "seeing" will be construction seen as nature-pattern. *That* seeing, only, is inspired architecture.

This dawning sense of the *Within* as *reality* when it is clearly seen as *Nature* will by way of glass make the garden be the building as much as the building will be the garden: the sky as treasured a feature of daily indoor life as the ground itself.

You may see that walls are vanishing. The cave for human dwelling purposes is at last disappearing.

Walls themselves because of glass will become windows and windows as we used to know them as holes in walls will be seen no more. Ceilings will often become as window-walls, too. The textile may soon be used as a beautiful overhead for space, the textile an attribute of genuine architecture instead of decoration by way of hangings and upholstery. The usual camouflage of the old order. Modern integral floor heating will follow integral lighting and standardized unitary sanitation. All this makes it reasonable and good economy to abolish building as either a hyper-boxment or a super-borough.

Haven't senseless elaboration and false mass become sufficiently insulting and oppressive to our intelligence as a people? And yet, senseless elaboration and false mass were tyrannical as "conspicuous waste" in all of our nineteenth century architecture either public or private! Wherever the American architect, as scholar, went he "succeeded" to that extent.

Another reality: continuity

But now, as third resource, the resource essential to modern architecture destined to cut down this outrageous mass-waste and mass-lying is the principle of continuity. I have called it tenuity. Steel is its prophet and master. You must come with me for a moment into "engineering" so called. This is to be an unavoidable strain upon your kind attention. Because, unfortunately, gentle reader, you cannot understand architecture as *modern* unless you do come, and—paradox—you can't come if you are too well educated as an engineer or as an architect either. So your common sense is needed more than your erudition.

However, to begin this argument for steel: classic architecture knew only the post as an upright. Call it a column. The classics knew only the beam as a *horizontal.* Call it a beam. The beam resting upon the upright, or column, was structure throughout, to them. Two things, you see, one thing set on top of another thing in various materials and put there in various ways. Ancient, and nineteenth century building science too, even building *à la mode,* consisted simply in reducing the various stresses of all materials and their uses to these two things: post and beam. Really, construction used to be just sticking up something in wood or stone and putting something else in wood or stone (maybe iron) on top of it: simple superimposition, you see? You should know that all "Classic" architecture was and still is some such form of direct superimposition. The arch is a little less so, but even that must be so "figured" by the structural engineer if you ask him to "figure" it.

Now the Greeks developed this simple act of super-imposition pretty far by way of innate tasteful refinement. The Greeks were true aestheticians. Roman builders too, when they forgot the Greeks and brought the beam over as a curve by way of the arch, did something somewhat new but with consequences still of the same sort. But observe, all architectural features made by such "Classic" agglomeration were killed for us by cold steel. And though millions of classic corpses yet encumber American ground unburied, they are ready now for burial.

Of course this primitive post-and-beam construction will always be valid, but both support and supported may now by means of inserted and welded steel strands or especially woven filaments of steel and modern concrete casting be plaited and united as one physical body: ceilings and walls made one with floors and reinforcing each other by making them continue into one another. This Continuity is made possible by the tenuity of steel.

So the new order wherever steel or plastics enter construction says: weld these two things, post and beam (wall and ceiling) together by means of steel strands buried and stressed within the mass material itself, the steel strands electric-welded where steel meets steel within the mass. In other words the upright and horizontal may now be made to work together as one. A new world of form opens inevitably.

Where the beam leaves off and the post begins is no longer important nor need it be seen at all because it no longer actually *is.* Steel in tension enables the support to slide into the supported, or the supported to grow into the support somewhat as a tree-branch glides out of its tree trunk. Therefrom arises the new series of interior physical reactions I am calling "Continuity." As natural consequence the new aesthetic or appearance we call *Plasticity* (and plasticity is peculiarly "modern") is no longer a mere appearance. Plasticity actually becomes the normal *countenance,* the *true aesthetic* of genuine structural reality. These interwoven steel strands may so lie in so many directions in any extended member that the extensions may all be economical of material and though much lighter, be safer construction than ever before. There as in the branch of the tree you may see the cantilever. The cantilever is the simplest one of the important phases of this third new structural resource now demanding new significance. It has yet had little attention in architecture. It can do remarkable things to liberate space.

But plasticity was modest new countenance in our American architecture at least thirty-five years ago in my own work, but then denied such simple means as welding and the mesh. It had already eliminated all the separate identities of post and beam in architecture. Steel in tension enters now by way of mesh and welding to arrive at actual, total plasticity if and when desired by the architect. And to prove the philosophy of organic architecture, form and function are one, it now enters architecture as the *aesthetic countenance* of *physical reality.*

To further illustrate this magic simplifier we call "plasticity" see it as flexibility similar to that of your own hand. What makes your hand expressive? Flowing continuous line and continuous surfaces seen continually mobile of the articulate articulated structure of the hand as a whole. The line is seen as "hand" line. The varying planes seen as "hand" surface. Strip the hand to the separate structural identities of joined bones (post and beam) and plasticity as an expression of the hand would disappear. We would be then getting back to the joinings, breaks, jolts, and joints of ancient, or "Classic," architecture; thing to thing; feature to feature. But plasticity is the reverse of that ancient agglomeration and is the ideal means behind these simplified free new effects of straight line and flat plane.

I have just said that plasticity in this sense for thirty-five years or more has been the recognized aesthetic ideal for such simplification as was required by the machine to do organic work. And it is true of my own work.

As significant outline and expressive surface, this new aesthetic of plasticity (physical continuity) is now a useful means to form the supreme physical-body of an organic, or integral, American Architecture.

Of course, it is just as easy to cheat by simplicity as it is to cheat with "classical"

structure. So, unluckily, here again is the "modernistic" architectural picture-maker's deadly facility for imitation at ease and again too happy with fresh opportunity to "fake effects." Probably another Renaissance is here imminent.

Architecture is now integral architecture only when Plasticity is a genuine expression of actual construction just as the articulate line and surface of the hand is articulate of the structure of the hand. Arriving at steel, I first used Continuity as actual stabilizing principle in concrete slabs, and in the concrete ferro-block system I devised in Los Angeles.

In the form of the cantilever or as horizontal continuity this new economy by means of tenuity is what saved the Imperial Hotel from destruction during the great earthquake of 1922. It did not appear in the grammar of the building for various reasons, chiefly because the building was to look somewhat as though it belonged to Tokyo.

Later, in the new design for St. Mark's Tower, New York City, this new working principle economized material, labor, and liberated or liberalized space in a more developed sense. It gave to the structure the significant outlines of remarkable stability and instead of false masonry-mass significant outlines came out. The abstract pattern of the structure as a complete structural-integrity of Form and Idea may be seen fused as in any tree but with nothing imitating a tree.

Continuity invariably realized remarkable economy of labor and building materials as well as peace. Unfortunately there is yet little or no data to use as tabulation. Tests will have to be made continually for many years to make the record available to slide-rule engineers.

In the ancient order there was little thought of economy of materials. The more massive the whole structure looked, the better it looked to the ancients. But seen in the light of these new economic interior forces conserved by the tensile strength of a sheet of plastic or any interweaving of strands of steel in this machine age, the old order was as sick with weight as the Buonarotti dome. Weak . . . because there could be no co-interrelation between the two elements of support and supported to reinforce each other as a whole under stress or elemental disturbance.

So this tremendous new resource of *tenuity*—a quality of steel—this quality of *pull* in a building (you may see it ushering in a new era in John Roebling's Brooklyn Bridge) was definitely lacking in all ancient architecture because steel had not been born into building.

The tenuous strand or slab as a common means of strength had yet to come. Here today this element of continuity may cut structural substance nearly in two. It may cut the one half in two again by elimination of needless features, such elimination being entirely due to the simplification I have been calling "plasticity."

It is by utilizing mass production in the factory in this connection that some idea of the remarkable new economics possible to modern architecture may be seen approaching those realized in any well-built machine. If standardization can be humanized and made flexible in design and the economics brought to the home owner, the greatest service will be rendered to our modern way of life. It may be really born—This democracy I mean.

Involved as a matter of design in this mass production, however, are the involute, all but involuntary reactions to which I have just referred: the ipso facto building code and the fact that the building engineer as now trained knows so little about them. However, the engineer is learning to calculate by model-making in some instances—notably Professor Beggs at Princeton University.

The codes so far as I can see will have to die on the vine with the men who made them.

Materials for their own sake

As the first integrity and the two first new resources appeared out of the interior nature of the kind of building, called Architecture—so now—naturally interior to the true nature of any good building comes the fourth new resource. This is found by recognizing the nature of the materials used in construction.

Just as many fascinating different properties as there are different materials that may be used to build a building will continually and naturally qualify, modify, and utterly change all architectural form whatsoever.

A stone building will no more be nor will it look like a steel building. A pottery, or terra cotta building, will not be nor should it look like a stone building. A wood building will look like none other, for it will glorify the stick. A steel and glass building could not possibly look like anything but itself. It will glorify steel and glass. And so on all the way down the long list of available riches in materials: Stone, Wood, Concrete, Metals, Glass, Textiles, Pulp, and Plastics; riches so great to our hand today that no comparison with Ancient Architecture is at all sensible or anything but obstruction to our Modern Architecture.

In this particular, as you may see, architecture is going back to learn from the natural source of all natural things.

In order to get Organic architecture born, intelligent architects will be forced to turn their backs on antique rubbish heaps with which Classic eclecticism has encumbered our new ground. So far as architecture has gone in my own thought it is first of all a character and quality of mind that may enter also into human conduct with social implications that might, at first, confound or astound you. But the only basis for any fear of them lies in the fact that they are all sanely and thoroughly *constructive.*

Instinctively all forms of pretense fear and hate reality. *The hypocrite must always hate the radical.*

This potent fourth new resource—the Nature of Materials—gets at the common center of every material in relation to the work it is required to do. This means that the architect must again begin at the very beginning. Proceeding according to Nature now he must sensibly go through with whatever material may be in hand for his purpose according to the methods and sensibilities of a man in this age. And when I say Nature, I mean inherent *structure* seen always by the architect as a matter of complete design. It is in itself, always, *nature-pattern.* It is this profound internal sense of materials that enters in as Architecture now. It is this the fifth new resource that must captivate and hold the mind of the modern architect to creative work. The fifth will give new life to his imagination if it has not been already killed at school.

And, inevitable implication! New machine age resources require that all buildings do not resemble each other. The new ideal does not require that all buildings be of steel, concrete, or glass. Often that might be idiotic waste.

Nor do the resources even *imply* that mass is no longer a beautiful attribute of masonry materials when they are genuinely used. We are entitled to a vast variety of form in our complex age so long as the form be genuine—serves Architecture and Architecture serves life.

But in this land of ours, richest on earth of all in old and new materials, architects must exercise well-trained imagination to see in each material, either natural or compounded plastics, their own *inherent style.* All materials may be beautiful, their beauty much or entirely depending upon how well they are used by the Architect.

In our modern building we have the Stick. Stone. Steel. Pottery. Concrete. Glass. Yes, Pulp, too, as well as plastics. And since this dawning sense of the "within" is the

new reality, these will all give the main *"motif"* for any real building made from them. The materials of which the building is built will go far to determine its appropriate mass, its outline, and, especially, proportion. Character is criterion in the form of any and every building or industrial product we can call Architecture in the light of this new ideal of the new order.

The new integrity

Strange! At this late date, it is modern architecture that wants life to learn to see life as life, because architecture must learn to see brick as brick, learn to see steel as steel, see glass as glass. So modern thought urges all of life to demand that a bank look like a bank (bad thought though a bank might become) and not depend upon false columns for credit. The new architecture urges all of life to demand that an office building look like an office building, even if it should resemble the cross section of a beehive. Life itself should sensibly insist in self-defense that a hotel look and conduct itself like a hotel and not like some office building. Life should declare, too, that the railroad station look like a railroad station and not try so hard to look like an ancient temple or some monarchic palazzo. And while we are on this subject, why not a place for opera that would look something like a place for opera—if we must have opera, and not look so much like a gilded, crimsoned bagnio. Life declares that a filling station should stick to its work as a filling station: look the part becomingly. Why try to look like some Colonial diminutive or remain just a pump on the street. Although "just a pump" on the street is better than the Colonial imitation. The good Life itself demands that the school be as generously spaced and a thought-built good-time place for happy children: a building no more than one story high—with some light overhead, the school building should regard the children as a garden in sun. Life itself demands of Modern Architecture that the house of a man who knows what home is should have his own home his own way if we have any man left in that connection after F.H.A. is done trying to put them, all of them it can, into the case of a man who builds a home only to sell it. Our Government forces the home-maker into the real-estate business if he wants a home at all.

Well, after all, this line of thought was all new-type common sense in architecture in Chicago only thirty years ago. It began to grow up in my own work as it is continuing to grow up more and more widely in the work of all the world. But, insulting as it may seem to say so, nor is it merely arrogant to say that the actual thinking in that connection is still a novelty, only a little less strange today than it was then, although the appearances do rapidly increase.

Integral ornament at last!

At last, is this fifth resource, so old yet now demanding fresh significance. We have arrived at integral ornament—the nature-pattern of actual construction. Here, confessed as the spiritual demand for true significance, comes this subjective element in modern architecture. An element so hard to understand that modern architects themselves seem to understand it least well of all and most of them have turned against it with such fury as is born only of impotence.

And it is true that this vast, intensely human significance is really no matter at all for any but the most imaginative mind not without some development in artistry and the *gift* of a sense of proportion. Certainly we must go higher in the realm of imagination when we presume to enter here, because we go into Poetry.

Now, very many write good prose who cannot write poetry at all. And although

staccato specification is the present fashion, just as "functionalist" happens to be the present style in writing—poetic prose will never be undesirable. But who condones prosaic poetry? None. Not even those fatuously condemned to write it.

So, I say this fourth new resource and the fifth demand for new significance and integrity is ornament *integral to building as itself poetry.* Rash use of a dangerous word. The word "Poetry" *is* a dangerous word.

Heretofore, I have used the word "pattern" instead of the word ornament to avoid confusion or to escape the passing prejudice. But here now ornament is in its place. Ornament meaning not only *surface qualified by human imagination but imagination* giving *natural pattern* to structure. Perhaps this phrase says it all without further explanation. This resource—integral ornament—is new in the architecture of the world, at least insofar not only as imagination qualifying a surface—a valuable resource—but as a greater means than that: *imagination giving natural pattern to structure itself.* Here we have new significance, indeed! Long ago this significance was lost to the scholarly architect. A man of taste. He, too soon, became content with symbols.

Evidently then, this expression of structure as a pattern true to the nature of the materials out of which it was made, may be taken much further along than physical need alone would dictate? "If you have a loaf of bread break the loaf in two and give the half of it for some flowers of the Narcissus for the bread feeds the body indeed but the flowers feed the soul."

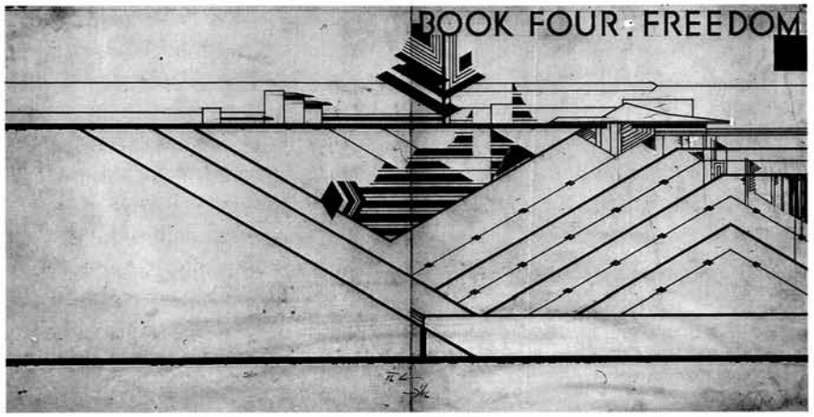
Into these higher realms of imagination associated in the popular mind as sculpture and painting, buildings may be as fully taken by modern means today as they ever were by craftsmen of the antique order.

It is by this last and poetic resource that we may give greater structural entity and greater human significance to the whole building than could ever be done otherwise. This statement is heresy at this left-wing moment, so—we ask, "taken how and when taken?" I confess you may well ask, by whom? The answer is, taken by the true *poet.* And where is this Poet today? Time will answer.

Yet again in this connection let us remember Ong's Chinese observation, "Poetry is the sound of the heart." So, in the same uncommon sense integral ornament is the developed sense of the building as a whole, or the manifest *abstract pattern of structure itself.* Interpreted. Integral ornament is simply *structure-pattern made visibly articulate* and seen in the building as it is seen articulate in the structure of the trees or a lily of the fields. It is the expression of inner rhythm of Form. Are we talking about Style? Pretty nearly. At any rate, we are talking about the qualities that make *essential architecture* as distinguished from any mere act of building whatsoever.

What I am here calling integral-ornament is founded upon the same organic simplicities as Beethoven's *Fifth Symphony,* that amazing revolution in tumult and splendor of sound built on four tones based upon a rhythm a child could play on the piano with one finger. Supreme imagination reared the four repeated tones, simple rhythms, into a great symphonic poem that is probably the noblest thought-built edifice in our world. And Architecture is like Music in this capacity for the symphony.

But concerning higher development of building to more completely express its life principle as significant and beautiful, let us say at once by way of warning: it is better to die by the wayside of left-wing Ornaphobia than it is to build any more merely ornamented buildings, as such; or to see right-wing architects die any more ignoble deaths of *Ornamentia.* All period and pseudoclassic buildings whatever, and (although their authors do not seem to know it) most protestant buildings, they call themselves



["Great Highway and Field of Decentralization." Original design for title spread of "Book Four. Freedom," as published in Frank Lloyd Wright, An Autobiography, *between pp. 299 and 301. Courtesy of the Frank Lloyd Wright Foundation.]*

internationalist, are really ornamental in definitely objectionable sense. A plain flat surface cut to shape for its own sake, however large or plain the shape, is, the moment it is sophisticatedly so cut, no less ornamental than egg-and-dart. All such buildings are objectionably "ornamental," because like any buildings of the old classical order both wholly ignore the *nature* of the *first* integrity. Both also ignore the four resources and both neglect the nature of machines at work on materials. Incidentally and as a matter of course both misjudge the nature of time, place, and the modern life of man.

Here in this new leftish emulation as we now have it, is only the "istic," ignoring principle merely to get the "look" of the machine or something that looks "new." The province of the "ite."

In most so-called "internationalist" or "modernistic" building therefore we have no true approach to organic architecture: we have again merely a new, superficial aesthetic trading upon that architecture because such education as most of our architects possess qualifies them for only some kind of eclecticism past, passing, or to pass.

Nevertheless I say, if we can't have buildings with integrity we would better have more imitation machines for buildings until we can have truly sentient architecture. "The machine for living in" is sterile, but therefore it is safer, I believe, than the festering mass of ancient styles.

Great power

A far greater power than slavery, even the intellectual slavery as in the school of the Greeks, is back of these five demands for machine-age significance and integrity. Stupendous and stupefying power. That power is the leverage of the machine itself. As now set up in all its powers the machine will confirm these new implicities and complicities in architecture at every point, but will destroy them soon if not checked by a new simplicity.

The proper use of these new resources demands that we use them all together with integrity for mankind if we are to realize the finer significances of life. The finer significance, prophesied if not realized by organic architecture. It is reasonable to believe that life in our country will be lived in full enjoyment of this new freedom of the extended horizontal line because the horizontal line now becomes the great architectural highway. The flat plane now becomes the regional field. And integral-pattern becomes "the sound of the Usonian heart." The cover-graph of this book, I have called it "Freedom," uses the great highway and the regional field of decentralization, uses it as a significant pattern.

I see this extended horizontal line as the true earth-line of human life, indicative of freedom. Always.

The broad expanded plane is the horizontal plane infinitely extended. In that lies such freedom for man on this earth as he may call his.

Ineffable Space
Le Corbusier

Taking possession of space is the first gesture of living things, of men and of animals, of plants and of clouds, a fundamental manifestation of equilibrium and of duration. The occupation of space is the first proof of existence.

The flower, the plant, the tree, the mountain stand forth, existing in a setting. If they one day command attention because of their satisfying and independent forms, it is because they are seen to be isolated from their context and extending influences all around them. We pause, struck by such interrelation in nature, and we gaze, moved by this harmonious orchestration of space, and we realize that we are looking at the reflection of light.

Architecture, sculpture, and painting are specifically dependent on space, bound to the necessity of controlling space, each by its own appropriate means. The essential thing that will be said here is that the release of aesthetic emotion is a special function of space.

Action of the work (architecture, statue, or painting) on its surroundings: vibrations, cries or shouts (such as originate from the Parthenon on the Acropolis in Athens), arrows darting away like rays, as if springing from an explosion; the near or distant site is shaken by them, touched, wounded, dominated, or caressed. *Reaction of the setting:* the walls of the room, its dimensions, the public square with the various weights of its facades, the expanses or the slopes of the landscape even to the bare horizons of the plain or the sharp outlines of the mountains—the whole environment brings its weight to bear on the place where there is a work of art, the sign of man's will, and imposes on it its deep spaces or projections, its hard or soft densities, its violences or its softnesses. A phenomenon of concordance takes place, as exact as mathematics, a true manifestation of plastic acoustics; thus one may speak of one of the most subtle of all orders of phenomena, sound, as a conveyor of joy (music) or of oppression (racket).

Without making undue claims, I may say something about the "magnification" of space that some of the artists of my generation attempted around 1910, during the wonderfully creative flights of cubism. They spoke of the *fourth dimension* with intuition and clairvoyance. A life devoted to art, and especially to a search after harmony, has enabled me, in my turn, to observe the same phenomenon through the practice of three arts: architecture, sculpture, and painting.

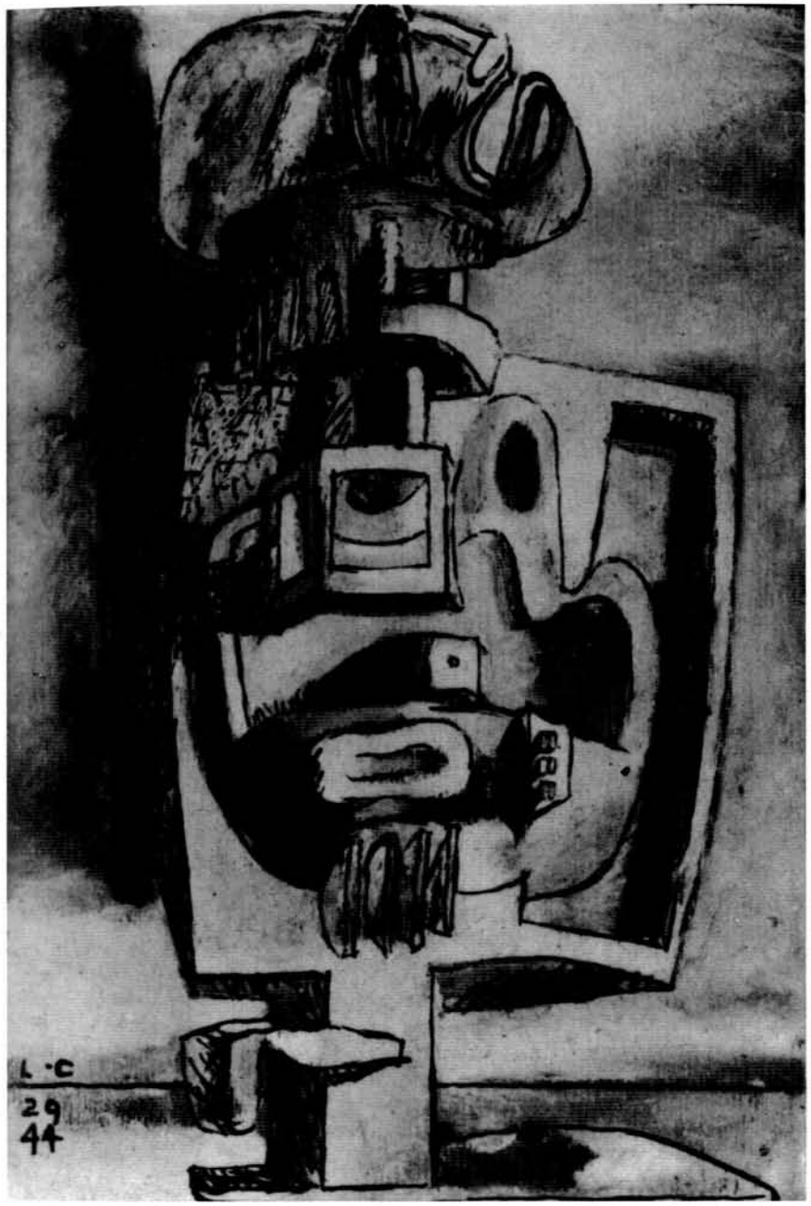
The fourth dimension is the moment of limitless escape evoked by an exceptionally just consonance of the plastic means employed.

It is not the effect of the subject chosen; it is a victory of proportion in everything—the anatomy of the work as well as the carrying out of the artist's intentions whether consciously controlled or not. Achieved or unachieved, these intentions are always existent and rooted in intuition, that miraculous catalyst of acquired, assimilated, even forgotten wisdom. In a complete and successful work there are hidden masses of implications, a veritable world which reveals itself to those whom it may concern, which means: to those who deserve it.

Then a boundless depth opens up, effaces the walls, drives away contingent presences, *accomplishes the miracle of ineffable space.*

I am not conscious of the miracle of faith, but I often live that of ineffable space, the consummation of plastic emotion.

Here I have been allowed to speak as a man of the laboratory, dealing with his personal experiments carried out in the major arts which have been so unfortunately dissociated or separated for a century. Architecture, sculpture, painting: the movement of time and of events now unquestionably leads them toward a synthesis.



[The figure] necessitates the horizon of the ground or architectural walls. Infinite horizon into which the radiant waves are going to sink, architectural walls poised to echo, to bring to life this acoustic time-space phenomenon evoked at the beginning of these notes. [Untitled, but one of the "Ozon" series, oil on wood, 1929/1944. From L'Architecture d'Aujourd'hui, *January 1946, pp. 16–17. Copyright © 1992 ARS, N.Y./SPADEM, Paris.]*

[With Infinite Slowness Arises the Great Form]
Ludwig Mies van der Rohe

[*card 1*]
Ladies and Gentlemen:
The attempt to revitalize the building art from the direction of form has failed. A century's worth of effort has been wasted and leads into the void. That heroic revolution of extremely talented men at the turn of the century had the time span of a fashion. The invention of forms is obviously not the task of the building art. Building art is more and different. Its excellent name already makes it clear that building is its natural content and art its completion.

[*card 2*]
Building, where it became great, was almost always indebted to construction, and construction was almost always the conveyor of its spatial form. Romantic and Gothic demonstrate that in brilliant clarity. Here as there structure expresses the meaning, expresses it down to the last remnant of spiritual value. But if that is so, then it must follow that the revitalization of the building art can only come from construction and not by means of arbitrarily assembled motifs.

[*card 3*]
But construction, that loyal safekeeper of an epoch's spirit, had rejected all that was arbitrary and created an objective basis for new developments. And so it has happened here also. The few authentic structures of our period exhibit construction as a component of building. Building and meaning are one. The manner of building is decisive and of testimonial significance.

[*card 4*]
Construction not only determines form but is form itself. Where authentic construction encounters authentic contents, authentic works result: works genuine and intrinsic. And they are necessary. Necessary in themselves and also as members of a genuine order. One can only order what is already ordered in itself. Order is more than organization. Organization is the determination of function.

[*card 5*]
Order, however, imparts meaning. If we would give to each thing what intrinsically belongs to it, then all things would easily fall into their proper place; only there they could really be what they are and there they would fully realize themselves. The chaos in which we live would give way to order and the world would again become meaningful and beautiful.

[*card 6*]
But that means to let go of the self-will and do the necessary. To articulate and realize the timely and not prevent what wants to and must become.

[*card 7*]
In other words: serve rather than rule. Only those who know how hard it is to do even simple things properly can respect the immensity of the task. It means to persevere

humbly, renounce effects, and do what is necessary and right with loyalty.

[*card 8*]
Only yesterday one spoke of the eternal forms of art, today one speaks of its dynamic change. Neither is right. Building art is beholden neither to the day nor to eternity, but to the epoch. Only a historical movement offers it space for living and allows it to fulfill itself. Building art is the expression of what historically transpires. Authentic expression of an inner movement.

[*card 9*]
Fulfillment and expression of something immanent. This may also be the reason why the nineteenth century failed. Unsuspected and deep beneath all the confused attempts of that time ran the quiet current of change, fed by forces of a world that was intrinsically already different, and a jungle of new forms broke out. Unusual and of wild power. The world of technical forms; large and forceful.

[*card 10*]
Genuine forms of a genuine world. Everything else that occurred looked, next to that, pale and marginal. Technology promises both power and grandeur, a dangerous promise for man who has been created for neither one nor the other. Those who are truly responsible feel depressed and respond to this promise by searching for the dignity and value of technology.

[*card 11*]
Is the world as it presents itself bearable for man?
More: is it worthy of man or too lowly?
Does it offer room for the highest form of human dignity?
Can it be shaped so as to be worthwhile to live in?

[*card 12*]
And finally: is the world noble enough to respond to man's duty to erect a high and magnanimous order? These are questions of immense weight. One can quickly affirm them and quickly negate them, and one has done that.

[*card 13*]
To the careful, however, beyond all prejudices and misjudgments, technology appears as a world which is what it is, specific and narrow, dependent on the panorama of its own time just as any other building art, and precluding a host of possibilities.

[*card 14*]
There is no reason to overestimate this form. But it is, like all other authentic forms, both deep and high. Called to the one, attempting the other. A real world.— If that is true, then technology, too, must change into building art to complete itself. It would be a building art that inherits the Gothic legacy. It is our greatest hope.

[*card 15*]
But none of this comes about by itself. History does not come about by itself. [*addition in the original manuscript:* History must be done.] And historical measurements are

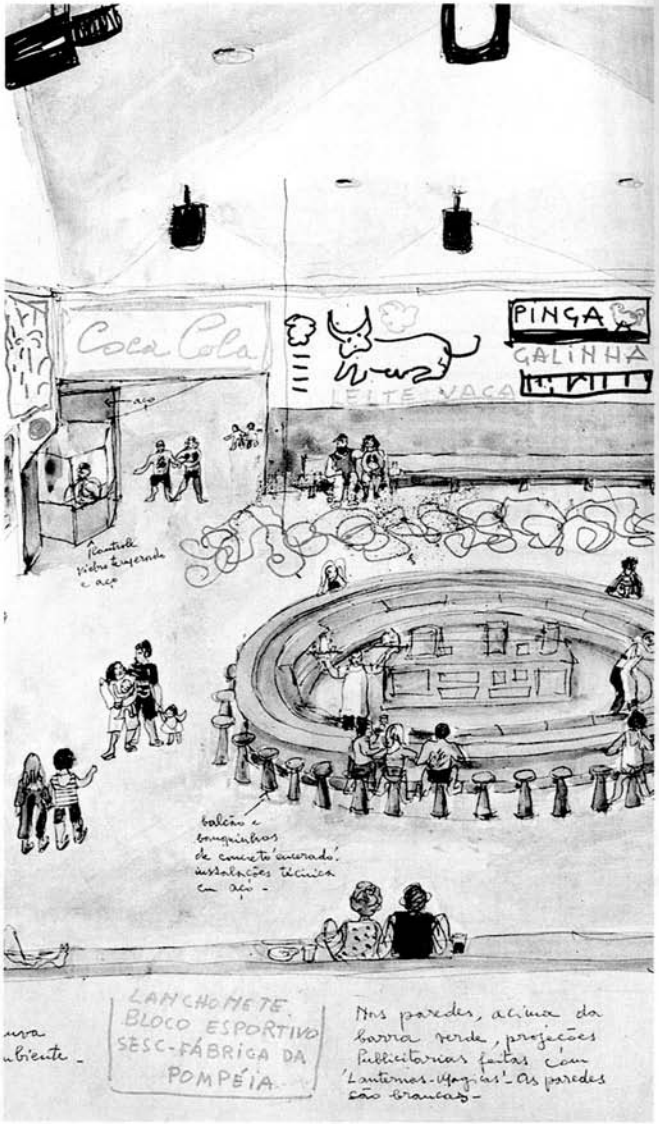
shorter than many realize. Only thirty life spans separate us from the Acropolis. And the breathing span of the Middle Ages was too short for it to complete its cathedrals. [*addition to the original manuscript:* We have all reason to be wide awake and not sleep away our time.]

[*card 16*]
Furthermore, the technological age is not as young as it may appear. Whitehead transferred the hour of its birth into the seventeenth century. That may be. The ultimate reasons for what occurs today may be found in the discussion of lonely monks behind quiet Romanesque monastery walls.

[*card 17*]
With infinite slowness arises the great form the birth of which is the meaning of the epoch. [*crossed out:* But a reconciliatory forgiving kindness of history permits great things to die in their greatness and spares them from old age.] Not everything that happens takes place in full view. The decisive battles of the spirit are waged on invisible battlefields.

[*card 18*]
The visible is only the final step of a historical form. Its fulfillment. Its true fulfillment. Then it breaks off. And a new world arises.

[*card 19*]
What I have said is the ground on which I stand; that which I believe and the justification of my deeds. Convictions are necessary, but in the realm of one's work they have only limited significance. In the final analysis it is the performance that matters [*crossed-out addition in original manuscript:* That is what Goethe meant when he said: Create, artist, do not talk.]



STONES AGAINST DIAMONDS (1947)

Ever since I was a child I've collected things: pebbles, shells from the rocks in the Abruzzi, strands of wire, little screws. While I was still very young I remember something momentous happened in the form of a chicken my mother was preparing for our Sunday roast. In its stomach was a collection of glass and pebbles worn smooth by water, in shades of green, pink, black, brown and white. My mother gave them to me, and that was the start of my collection, which I kept in a little powder compact, a present from my Aunt Esterina, made from the blue steel of German guns abandoned after France's victory in the First World War. I was six years old. Aunt Esterina had gone to Naples to sit for a school exam, and when she came back she told me that all the trees in Naples were made of pink coral. From that moment on, pink coral became a part of my life.

My passion for stones continued to grow. By the age of 15 my new love was a window display on the Via Condotti, which was always full of antique jewels. At least once a week, on the way home from my school on Via Ripetta, I'd stop and gaze at the display. One day the owner invited me in, and so began my friendship with Signor Rapi, who let me handle the stones. My absolute favourite was a little blue cameo, dazzling as the dawn, with a little dog's head on it. Signor Rapi said it was English, dating from the start of the last century, and that the stone was called labradorite. So blue labradorite was now added to the pantheon alongside pink coral. These were 'semi-precious' stones – gold, pearls and diamonds never interested me at all.

The years went by, bringing the outbreak of the Second World War, my training as an architect, a fast-moving career – I was editing *Domus* by the age of 25. Then P M Bardi

appeared on the horizon. An interview for *Domus* came with a lovely surprise – a necklace of dark coral cameos and gold that I had admired platonically on the Ponte Vecchio in Florence, in the window of Settepassi, goldsmiths to the King of Italy. Thus my love affair with 'stones' was rekindled.

The years passed.

In 1946 we were invited to come to Brazil. P M Bardi, then my husband, gave me a collection of night-blue aquamarines and other Brazilian stones.

My collection has grown. My love for Brazil has fuelled my love of gems. This is a country of marvellous stones, such as the quartz crystals that you can pick up from the ground in the mountains of Minas Gerais, in the tablelands, or even in São Paulo state, where, some years ago, I found some really beautiful ones, perfectly polished by nature, serving as gravel underlay for the tarmac being laid on the road out of Itararé.

Well, all of this is a prelude to calling for designers in Brazil to start working with these gemstones, which are unjustly tagged 'semi-precious'. Consider it an ethical demand for 'ornaments' made of base gold, bronze, diamonds with visible inclusions, silver, chrysolite, quartz and coloured beryl. Ornament has been a constant in human history, since ancient times – now in Brazil we may perhaps see the industrial design of 'high-end' jewellery distinct from the diamonds and gold of high-society ladies.

I could go on to the 'trinkets' sold by market traders and street peddlers. But that would be a whole other story.

First published in Marcelo Carvalho Ferraz (ed), *Lina Bo Bardi* (São Paulo: Instituto Lina Bo Bardi, 1993)

TECHNOLOGY AND ART (1960)

We dedicate this note to the young Concrete artist who – faced with some panels displaying a diagram of radar signals at the Bahia Museum of Modern Art – asked why we had decided to call our exhibition of engines and electronic parts 'Concrete Design', and to another young museum visitor who declared himself to be 'all for technology, not for art'. We would also like to remember Antonio Gramsci, who tackled the issue of technological humanism with great clarity more than 30 years ago now, in his book *Gli intellettuali e l'organizzazione della cultura*.

With the exhibition Concrete Design (named not to poke fun at the proponents of Concrete Art, but to clarify the terminology), the Museum of Modern Art in Bahia wanted to draw attention to an issue that affects Brazil today: the lingering of certain 'isms', and concretism in particular.[1] Forty years ago, these 'isms' foretold the coming of a new era, a new culture, and they drew their validity precisely from this 'prophesy', from the 'vanguard' which foresaw a future connection between art and science.

These 'isms' combined an enthusiasm for the scientific with a despair in face of the irremediable loss of the sentimental values of literary humanism. For example the Dutch De Stijl movement, led by Theo van Doesburg, called for rigour and a concrete worldview, whereas Dadaism overcame its anguish at the loss of the values of traditional culture by mocking this culture and blaming it for the eruption of the world's worst-ever catastrophe: the First World War.

But the reality of today negates any stance of romantic scientism or revolt. There can be no 'rigour', no 'structure', no 'internal logic of development'[2] in (visual) works where

the content and representation do not correspond to a real issue, but merely relate to an artificial problem, with an arbitrary solution defined *a priori* by the artist (which makes it not so much a solution as a romantico-technical title). The themes foreseen by Malevich, Mondrian and Theo van Doesburg have now become reality. They are real insofar as science seems to be equated with art in terms of its capacity to respond to man's aesthetic and emotional needs. This is the problem raised by certain 'isms', which we have to deal with today: the emotion of science, translated by man into technology, is the same as that transmitted by the work of art. Balance, structure, rigour – that whole other world which is unknown to man, but which is suggested by art, and for which we feel nostalgia.

And so art once more becomes identified with technique, just as it was in primitive times, when knowledge was associated with magic, with an unknown, poetic and merely suggested world. The great era of literary humanism is over. Man is swiftly being carried away by a mechanism of his own making, one approached – in contrast to past civilisations – with an increased critical capacity.

A new method imposes itself, both lucid and dry. Our new civilisation is defined by its capacity to accept or confront, to renounce or overcome, its problems, including the problems of art. We can see the dualism of art/science beginning to move towards fusion and unification with the emergence of a new kind of intellectual, one who focuses on contemporary cultural problems, rejecting both the pedantic literary intellectualism and the limited scientific positivism of the past.

The new humanism, with its technical worldview, tends to merge cultural problems into one other, through a process of simplification. This simplification is necessary, not only to grasp the technology – which in the years immediately before and after the war got into a vicious cycle of excessive details and organisational excess that reduced it to one almost baroque example: the automobile – but the whole of human life. This sense of a synthesis of science and art, this process of simplification, puts into

question the idea that man is either wholly technological or wholly aesthetic – as well as that old East/West divide where the West is seen as the exclusive realm of theory and the Orient as the exclusive realm of aesthetics. It is in this capacity of synthesis that we remember Antonio Gramsci.

First published in *Diário de Notícias* (Salvador, Bahia), 23–24 October 1960

NOTES

1. We refer here to concretism in the plastic arts. Concretism in poetry, which established itself quickly through its dry and technical language, succeeded in reinvigorating all sectors of Brazilian literature, from poetry to journalism. Though a latecomer to Brazil, this movement managed to obtain real results here, something it failed to do over the course of 40 years in wealthier countries. The same can be said of Le Corbusier's influence on Brazilian architecture. In terms of concretism, the difference between poetry and the plastic arts is the difference between mediums of expression and (more so) of content. While concrete poetry pares back language in order to arrive at its destination more quickly, to communicate its idea more directly, in the arts, contemporary concretism is something purely formal, limited to form and eliminating content. This 'technical' difference is an incomplete example of 'the identity of the arts' (as defined by Croce) and its absolute independence from technical modes of expression.
2. Catalogue to the exhibition of Concrete Art at the Museu de Arte Moderna de Rio de Janeiro. Quotation from Max Bill.

Architecture Is the Thoughtful Making of Spaces
Louis Kahn

Reflect on the great event in architecture when the walls parted and columns became.

It was an event so delightful and so thought wonderful that from it almost all our life in architecture stems.

The arch, the vault and the dome mark equally evocative times when they knew what to do from how to do it and how to do it from what to do.

Today these form and space phenomena are as good as they were yesterday and will always be good because they proved to be true to order and in time revealed their inherent beauty.

In the architecture of stone the single stone became greater than the quarry. Stone and architectural order were one.

A column when it is used should be still regarded as a great event in the making of space. Too often it appears as but a post or prop.

What a column is in steel or concrete is not yet felt as a part of us.

It must be different from stone.

Stone we know and feel its beauty.

Material we now use in architecture we know only for its superior strength but not for its meaningful form. Concrete and steel must become greater than the engineer.

The expected wonders in concrete and steel confront us. We know from the spirit of architecture that their characteristics must be in harmony with the spaces that want to be and evoke what spaces can be.

Forms and spaces today have not found their position in order though the ways of making things are new and resourceful.

A space in architecture shows how it is made.

The column or wall defines its length and breadth; the beam or vault its height.

Nothing must intrude to blur the statement of how a space is made.

The forms characterizing the great eras of architecture present themselves and tempt us to adapt them to concrete and steel. The solid stones become thinner and eye deceiving devices are found to hide the unwanted but inevitable services. Columns and beams homogenized with the partitions and ceiling tile concealing hangers, conduits, pipes and ducts deform the image of how space is made or served and

therefore presents no reflection of order and meaningful form.

We are still imitating the architecture of solid stones.

Building elements of solids and voids are inherent in steel and concrete. These voids are in time with the service needs of spaces. This characteristic combined with space needs suggest new forms.

One quality of a space is measured by its temperature by its light and by its ring.

The intrusion of mechanical space needs can push forward and obscure form in structure.

Integration is the way of nature. We can learn from nature.

How a space is served with light air and quiet must be embodied in the space order concept which provides for the harboring of these services.

The nature of spaces is further characterized by the minor spaces that serve it. Storage-rooms, service-rooms and cubicals must not be partitioned areas of a single space structure, they must be given their own structure.

The space order concept must extend beyond the harboring of the mechanical services and include the "servant spaces" adjoining the spaces served.

This will give meaningful form to the hierarchy of spaces.

Long ago they built with solid stones.

Today we must build with "hollow stones."

Nonstraightforward Architecture: A Gentle Manifesto

Robert Venturi

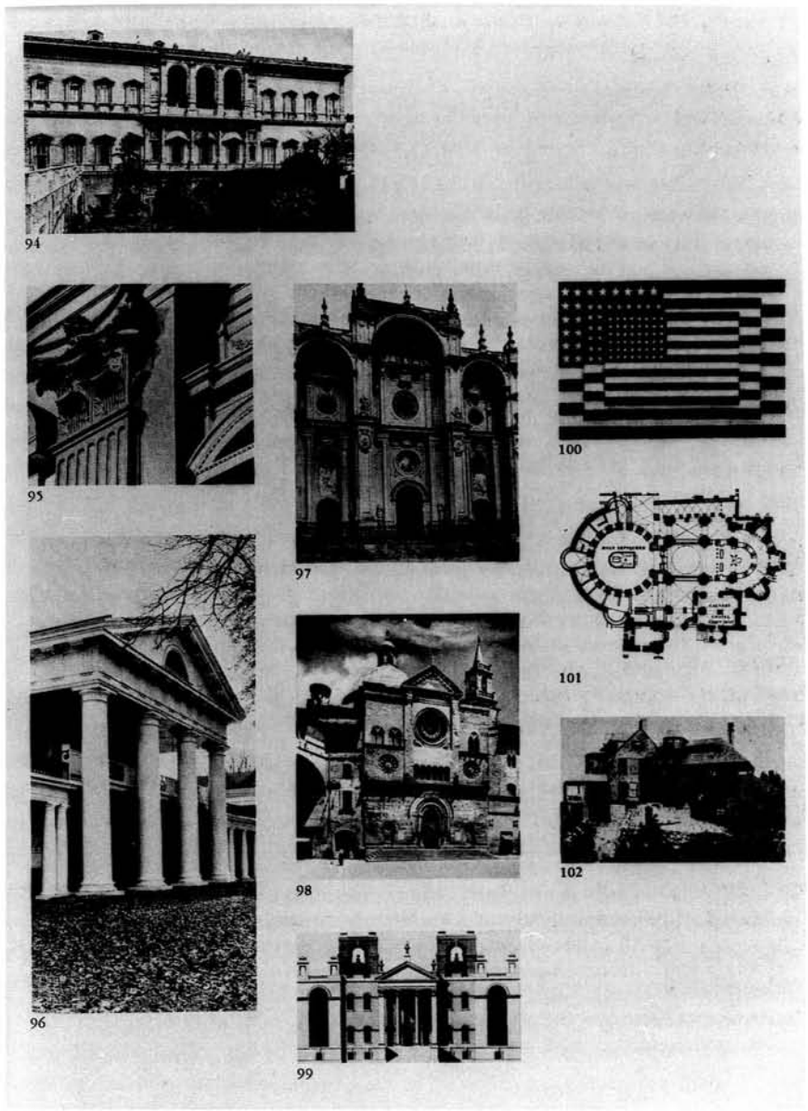
I like complexity and contradiction in architecture. I do not like the incoherence or arbitrariness of incompetent architecture nor the precious intricacies of picturesqueness or expressionism. Instead, I speak of a complex and contradictory architecture based on the richness and ambiguity of modern experience, including that experience which is inherent in art. Everywhere, except in architecture, complexity and contradiction have been acknowledged, from Gödel's proof of ultimate inconsistency in mathematics to T. S. Eliot's analysis of "difficult" poetry and Joseph Albers's definition of the paradoxical quality of painting.

But architecture is necessarily complex and contradictory in its very inclusion of the traditional Vitruvian elements of commodity, firmness, and delight. And today the wants of program, structure, mechanical equipment, and expression, even in single buildings in simple contexts, are diverse and conflicting in ways previously unimaginable. The increasing dimension and scale of architecture in urban and regional planning add to the difficulties. I welcome the problems and exploit the uncertainties. By embracing contradiction as well as complexity, I aim for vitality as well as validity.

Architects can no longer afford to be intimidated by the puritanically moral language of orthodox modern architecture. I like elements which are hybrid rather than "pure," compromising rather than "clean," distorted rather than "straightforward," ambiguous rather than "articulated," perverse as well as impersonal, boring as well as "interesting," conventional rather than "designed," accommodating rather than excluding, redundant rather than simple, vestigial as well as innovating, inconsistent and equivocal rather than direct and clear. I am for messy vitality over obvious unity. I include the non sequitur and proclaim the duality.

I am for richness of meaning rather than clarity of meaning; for the implicit function as well as the explicit function. I prefer "both-and" to "either-or," black and white, and sometimes gray, to black or white. A valid architecture evokes many levels of meaning and combinations of focus: its space and its elements become readable and workable in several ways at once.

But an architecture of complexity and contradiction has a special obligation toward the whole: its truth must be in its totality or its implications of totality. It must embody the difficult unity of inclusion rather than the easy unity of exclusion. More is not less.



[Complexity and Contradiction in Architecture *(1966), p. 63.]*

1960 William Katavolos: Organics

Chemical Arch

The 'informal' painting and sculpture of the fifties were followed by ideas concerning an 'informal' architecture. Again as in the twenties – at that time with the idea of 'industrialized building' – there arose the call for new building materials. We can look even farther back: as precisely as Paul Scheerbart described and demanded the characteristics of our modern man-made materials, so the American William Katavolos outlined in 1960 the characteristics of a building material with which a 'Chemical Architecture' could be realized. In this sense Katavolos – philosopher, lecturer, industrial designer – claims a place in the ranks of the century's architect visionaries.

A new architecture is possible through the matrix of chemistry. Man must stop making and manipulating, and instead allow architecture to happen. There is a way beyond building just as the principles of waves, parabolas and plummet lines exist beyond the mediums in which they form. So must architecture free itself from traditional patterns and become organic.

New discoveries in chemistry have led to the production of powdered and liquid materials which when suitably treated with certain activating agents expand to great size and then catalize and become rigid. We are rapidly gaining the necessary knowledge of the molecular structure of these chemicals, together with the necessary techniques that will lead to the production of materials which will have a specific programme of behaviour built into them while still in the sub-microscopic stage. Accordingly it will be possible to take minute quantities of powder and make them expand into predetermined shapes, such as spheres, tubes, and toruses.

Visualize the new city grow moulded on the sea, of great circles of oil substances producing patterns in which plastics pour to form a network of strips and discs that expand into toruses and spheres, and further perforate for many purposes. Double walls are windowed in new ways containing chemicals to heat, to cool, and to clean, ceiling patterns created like crystals, floors formed like corals, surfaces structurally ornamented with visible stress patterns that leap weightlessly above us. The fixed floors provide the paraphernalia for living, a vast variety of disposable pods plugged into more permanent cellular grids.

Let us discuss the principles of organics in how it might affect something as simple and as complicated as a chair. To be comfortable a chair must vibrate, must flex, must massage, must be high off the floor to allow for easy access or vacation. It should be also low to the floor, when sitting, to take pressure off those areas of the body which easily constrict. It must also be capable of educating its occupant, of having sounds come stereophonically to his ears, it must create correct ionic fields, it must have the ability to disappear when not in use, and above all it must be beautiful. A chair like this does not exist. My researches have led toward these needs again and again. We could create a

mechanical contrivance which would do all of these things, but from my own experience with such machines in which to sit, they would not fully satisfy or delight the eye of the beholder. Now this becomes very possible using blow moulded methods of plastics with a double wall, which could be filled with chemicals of various densities, which could allow the outside surface to be structurally ribbed in a beautiful pattern, which would allow the inner shell to flex and to receive the body, a chair which could rise through pressure to receive the sitter, then softly descend for closer contact with the floor, a chair which could easily again bring coolness or heat through chemical action, vibration and flex, a chair which could incorporate electronic devices for sound, and also for creating correct ionic fields. A chair which would be an affirmation of all that has gone before and that which is now necessary. This we can do without mechanics, organically in much the same manner as similar actions, such as respiration, peristalsis, pulse rhythms, occur in many natural forms.

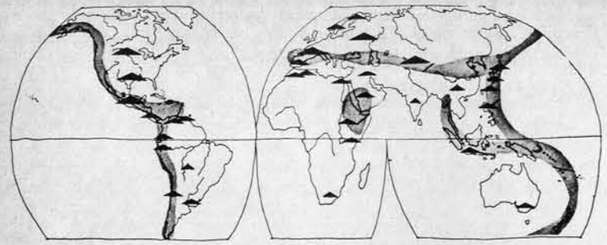
Carrying the principle further from furniture into the idea of containers for food, for liquids, we find that again the double wall structurally ribbed on the outside, smooth on the inside, could eliminate the need for refrigeration by chemically cooling the product within, or when activated or opened such a container might then chemically cook the soup, provide the disposable bowl itself from which to drink, and thereby make the stove, the sinks for cleaning, and areas for storage unnecessary, as we know them.

Again the organic process creates an immense simplification and allows a great freedom for the positioning of areas within the environment. As in the case of the bath and showers we find the double-walled container, which would enclose the form to the neck and chemically steam the occupant, would clean the body and then dry it.

To carry the point further the individual could then create his own plastic fabrics by pouring them in pleasing patterns around the base of the pedestal, allowing it to catalize and harden into continuous containers to wear in new ways.

Let us discuss the chemically packaged lavatory which would rise to a comfortable height for the user, then slowly lower to provide the particular position that we have found to be best for total evacuation. Again the entire unit would rise through pressure and allow its occupant to comfortably withdraw from it, leaving the waste products to be chemically consumed and packaged, thus eliminating the needs for connective pipes. Having cut the umbilicus we find it possible to create the new house on any site in that it is chemically a complete organism in which to live, deriving strength from its surrounds.

Houses such as this would grow to certain sizes, subdivide or fuse for larger functions. Great vaults would be produced with parabolic jets that catalize on contact with the air. Exploding patterns of an instantaneous architecture of transformations into desired densities, into known directions, for calculated durations. In the morning suburbs might come together to create cities, and at night move like music to other moorings for cultural needs or to produce the socio-political patterns that the new life demands.



1. World sulphur resources. Pyramids indicate sulphur-producing countries, showing relative size of reserves. Shaded areas are volcanic regions where sulphur ores are freely available.

SULPHUR BUILDING

WITOLD RYBCZYNSKI reviews the state of play of sulphur as a building material.

The world is blissfully unaware of the potentials of sulphur as a building material. Being non-porous and an excellent binding agent, sulphur can be combined to a variety of aggregates to form strong, impervious building materials. However, sulphur has three attributes which are of particular relevance to the needs of building development in the contemporary world of diminishing resources. These same attributes make sulphur especially suitable as a building material in Third World countries. Firstly, sulphur requires negligible energy to melt down and bind with other materials. Secondly, it requires neither high-technology equipment nor special skills to process the material and apply it in building construction. Finally, and perhaps of most importance, sulphur is in abundant supply in most countries of the world – either in the form of large deposits of sulphur ore in the volcanic regions or as a by-product of oil refining.

Resources

Since the Middle Ages, sulphur in the form of a yellow rock has been dug out from mines in Sicily and melted down to give pure sulphur.

In the USA, the drilling of oil in the Gulf of Mexico, led to the discovery of subterranean salt domes with great deposits of sulphur over them. In 1894 the chemist, Herm Frasch, discovered that subterranean deposits could be tapped by pumping super-heated water down wells to melt the sulphur, followed by air to force the sulphur up to the surface. The Frasch process produced much more and much cheaper sulphu than the Sicilian mines could.

By 1960 world production stood at 22 million tons, less than a quarter of which came from the USA. However, the late sixties saw a dramatic increase in the stockpiles of sulphur. In the industrialised countries which had suddenly woken up to environmental problems, anti-pollution laws forced the recovery of sulphur in the process of refining petroleum and natural gas, rather than burning off the surpluses as had previously been the practice. In 1970 Canadian stockpiles of sulphur amounted to no more than 3½ million tons. Five years later there are now 20 million tons – enough sulphur to rebuild every house in Canada, 2.

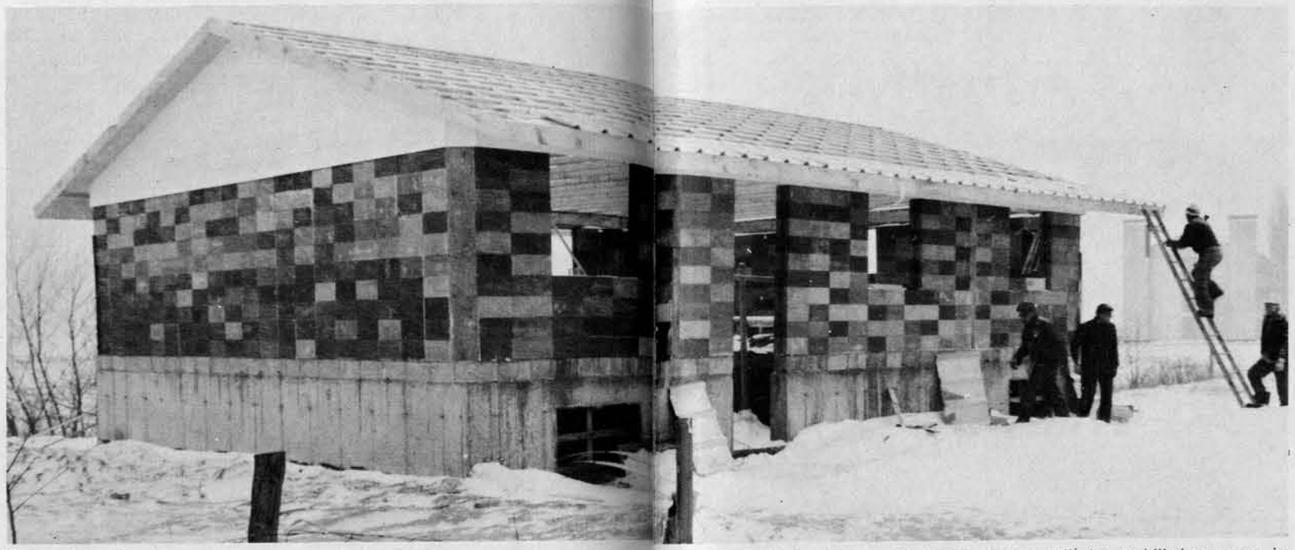
The rapid building up of sulphur stockpiles is just starting. At present, in the process of refining oil, about 80 million tons of sulphur, gets emitted into the atmosphere each year around the world. If all this was to be recovered at the refineries, the quantity of new sulphur available would be enormous. As oil companies start to tap the less pure oils and shales, which have much higher sulphur contents, and as the anti-pollution legislation spreads, sulphur is expected to be produced in many more locations, and in increasing quantities. In the coming year production of sulphur as a by-product of oil refining is to be started in Saudi Arabia, the Arab Emirates, Iran and Kuwait. Venezuela is already a big producer, and so is Japan. And this is only with respect to oil refining. When coal production starts up again, there will be an enormous new field to be exploited.

Sulphur, then, is a commodity that is becoming increasingly available in large quantities in many countries of the world, 1 – both as a mineral ore in volcanic regions, and as a waste product of the desulphurisation of petroleum in the industrialised and oil-producing countries. Now that sulphur has become a commodity in glut, its cost is reduced to negligible amounts both in industrialised and Third World countries. Also, in the case of its production as an industrial by-product or 'waste', its use represents both a bonus from anti-pollution precautions and a more effective use of the world's finite resources.

2. Sulphur stockpiles: Across the Canadian Prairies 20m tons are stored – enough to rebuild every house in Canada.

Witold Rybczynski recently took over from Alvaro Ortega as director of the Minimum Cost Housing Group at McGill University, Montreal.

All the work of the **Minimum Cost Housing Group** is a collaboration. Credit is due to all the architects, students and researchers who have taken part. The author would like to acknowledge the advice of his friend and colleague, Alvaro Ortega, as well as the assistance of Vikram Bhatt in assembling the photographic material. Harold Fike of the Sulphur Institute and Bill Rennie of the Sulphur Development Institute of Canada were kind enough to offer assistance, as was the Institute of Paper Chemistry and the Texas Gulf Sulphur Company.



Maison Lessard – phototype for consumer living. The Minimum Cost Housing Group's most recent development of sulphur building takes the form of a traditional Canadian prairie house. It was built by unskilled teenagers in sub-zero temperatures.

Pioneers

During World War II in 1944 (the same year as Buckminster Fuller's Wichita House), the Paper House, 8, was built at the Institute of Paper Chemistry for the US War Production Board. This experiment was the product of wartime restrictions on the use of metals, petro-chemically based impregnates and other critical materials. It was to be a prototype for a portable, expendable shelter. The basic building material was corrugated cardboard impregnated with sulphur. The entire house weighed only 500kg, could be erected by one man in 55 minutes, and cost $60 at the time. Although required to last only 12 months, it withstood eight severe Wisconsin winters. Unfortunately, the paper shortages of the late forties halted its further development. The Paper House was the true forerunner of the seventies' ecological house.

3. Alvaro Ortega, contemporary alchemist, at work. A Colombian architect and founder of MCHG, Ortega's efforts have proved sulphur housing to be feasible.

Late in 1971 in a garage in the centre of Montreal, the Minimum Cost Housing Group (MCHG) cast the world's first sulphur building block. They prepared the mix in a small cement mixer above a propane burner and cast it in a home-made timber-and-metal mould. After ten minutes they unbolted the mould and removed a smooth, golden-yellow block. They had produced the first waste-material, low-energy, quick-fix, easy-assemble, universal building block.

The doyen of the group was a Columbian architect, Alvar Ortega, 3. In 1946, as a graduate student, he had first become aware of the properties of sulphur concrete, which had been in use in his homeland since the time of the Spaniards. After working for the United Nations on the development of the now widely used asbestos-cement channel roof, Ortega was able to initiate investigation into the use of sulphur as a low-cost building material – first in Panama and later in Guatemala.

The opportunity for really practical experimentation, though, was frustratingly slow in coming. Finally, while on leave from McGill, he started up with Samir Ayad and Witold Rybczynski, what was to become known as the MCHG.

Material potentials

Sulphur has the following properties which make it suitable as a building material:

1) It is an excellent binding agent. Combined with aggregates or organic matter it forms concrete-like materials.

2) Sulphur is non-porous and therefore impervious, as are composite materials containing sulphur.

3) Since sulphur melts at relatively low temperatures, it requires very little energy to combine it to form usable building materials. (Only 30 K cal is required to liquify a kilogram of sulphur.)

4) The combining and setting process can be completed quickly.

5) This combining process requires neither high technology nor special skills.

6) Conversely, building materials containing sulphur can be easily and cheaply molten down again to retrieve the sulphur – ie. it is a recyclable material.

7) It is a readily available commodity at negligible cost.

These properties point to the suitability of sulphur as a building material in the contemporary context of ecological concerns and needs for energy conservation, both of which are relevant in low-cost construction.

4. The ultimate sulphur-concrete building block. A solid two-way interlocking block, developed by Bruce Etherington in Hawaii, has been proved superior to the more conventional shape used in Maison Lessard.

5. Sulphur-concrete paving. Useful not only for building blocks, but also for self-help road building and most other prefabricated concrete applications.

Sulphur concrete 4, 5

In combination with inorganic aggregates, sulphur forms a concrete-like material that can be easily and quickly moulded and which is impervious to water.

Sulphur concrete is usually prepared by mixing sand (70%) and sulphur (30%) in a concrete mixer heated by an open-gas flame. The mixture of sand and molten sulphur is then poured into moulds. As the mix hardens almost immediately, it can be de-moulded quickly, ready for use. Sulphur concretes with strengths of up to 70MN/m^2 have been developed, although much lower strengths suffice for most self-help applications. As a fire precaution, a number of inexpensive additives have been found to render sulphur self-extinguishing.

Using sulphur concrete instead of conventional concrete allows substantial savings in energy. The production of one sack of cement requires one 1 000MJ of energy. An equivalent quantity of sulphur concrete requires only 3% of that energy. The implications of such an energy advantage are enormous.

Finally, sulphur concrete does not require painting, as it is an impervious and self-cleaning material. Consequently the energy requirements for maintenance is minimal.

6. Cardboard power. After impregnation with sulphur this cardboard bucket became rigid enough to stand on. It held water without leaking for six months.

Impregnation with sulphur, 6

The impregnation of timber with sulphur raises strength and durability, decreases porosity and may increase resistance to termites. In effect softwoods could be turned into hardwoods.

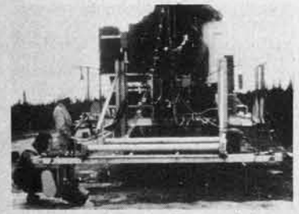
Impregnation of concrete increases compressive strengths and improves weathering characteristics. So, as with timber, low-strength concrete could be strengthened and its resistance to corrosion improved.

Sulphur surface-bond construction, 9

A sulphur coating that could replace mortar in masonry construction was developed by Dale and Ludwig of the Southwest Research Institute, in Texas, in 1972. Bricks or concrete blocks are laid dry, then a sulphur coating is brushed or sprayed onto internal and external surfaces. The coating dries almost immediately and forms a strong, hard, non-porous surface. The composition of the coating is 87% sulphur, 1.7% Didclyclopentadeine, 2.6% glass fibre, and 8.7% talc.

In Colombia, South America, eight houses were completed in 1974 using this technique, as part of a pilot project supported

by the American aid programme, USAID. Although the sulphur can be easily applied by hand using ordinary paint brushes, spraying machines have also been developed. Such equipment makes possible large-scale coatings such as on walls and roofs. The use of sulphur-fibre coatings as a waterproof membrane over porous materials (adobe, thatch, cardboard), particularly as a roofing material, has important implications for minimum-cost housing.



7. Insulated roads. For road bases, rigid sulphur foams provide adequate insulation to protect the pavement from arctic frosts while remaining strong enough to withstand heavy traffic.

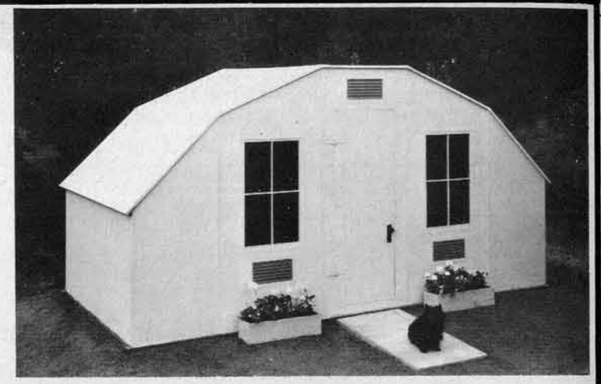
Sulphur foams, 7

A practical process for producing rigid sulphur foams was found in the mid-sixties. Sulphur readily foams with the introduction of foaming agents. The product compares favourably with conventional rigid foams such as expanded polyurethene: it provides similar thermal conductivity while having higher compressive strength. Chevron, which now holds the relevant patents, is developing the product as ground insulation for road-beds and pipelines in Northern Canada. Rigid sulphur foams are expected to enter the market within the next five years. Their application in housing has untried possibilities.

Sulphurized asphalts

In the second half of the 19th century, sulphur was added to natural asphalts in order to increase their viscosity at high temperatures, and to lower it at low temperatures. With the introduction of air-blown petroleum asphalts around 1900, the sulphurized asphalts, which were more expensive, were discontinued. Today, however, increasing petroleum prices has put asphalt in short supply. Two different processes for producing sulphurized asphalts are currently being developed by Shell and by Aquitaine. One replaces part of the aggregate with sulphur, the other, part of the asphalt. Test sections of roadways have been in existence in the USA, Canada and France for a number of years. Both processes are expected to be widely used by 1985.

Five sulphur houses



8. Paper House

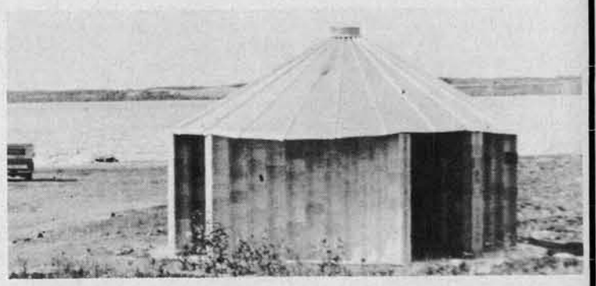
Location: Appleton, Wisconsin.
Built: Aug 44 (dismantled 1952).
Function: emergency housing prototype.
Dimensions: 8′ x 16′.
Materials: sulphur-impregnated paperboard.
Designers: Institute of Paper Chemistry.

9. SWRI Sulphur Building

Location: San Antonio, Texas.
Built: 1963
Function: utility building.
Dimensions: 18′ x 30′
Materials: cement blocks surface-bonded with sulphur/fibre composition.
Designers: Southwest Research Institute.

10. Ecol

Location: Ste-Anne-de-Bellevue, Quebec.
Built: Jul 72.
Function: demonstration house.
Dimensions: 12′ x 36′.
Materials: sulphur-concrete interlocking blocks.
Designers: Minimum Cost Housing Group.



11. Round House

Location: Saddle Lake, Alberta.
Built: Aug 73.
Function: community building.
Dimensions: 19′ diameter.
Materials: sulphur-concrete interlocking blocks.
Designers: MCHG.

12. Maison Lessard

Location: St. Francois-du-Lac, Quebec.
Built: Oct 74 – Aug 75.
Function: "en famille" orphanage.
Dimension: 26′ x 45′.
Materials: sulphur-concrete blocks.
Designers: MCHG.

Maison Lessard

The Minimum Cost Housing Group has so far carried out three building projects utilising sulphur: the experimental Ecol House in Montreal, **9**, (*AD* 4/73); the Saddle Lake Indian Community Building in Alberta, **10**, (*AD* 12/73); and the recently completed Maison Lessard at St Francois-du-Lac, **12**, a small village in Quebec.

The first two buildings are not winterised and have consequently been used only intermittently. Maison Lessard, however, is a fully insulated and heated house. It is a further development of the first two projects, and is expected to give valuable information on the long-term benefits and problems of sulphur building. It focusses on what has, from the beginning, been the primary concern of MCHG – self-help.

Père Marius Lessard, a Franciscan priest, approached MCHG in 1973, proposing to build an en-famille orphanage. He was interested in sulphur-block construction as a way of reducing costs and for taking advantage of the unskilled labour of a group of high-school students, as well as his own. The blocks were fabricated by eight teenagers, **13**, erected by MCHG, **14**, on foundations built by a local builder, and the house finished by Père Lessard with the assistance of carpenters, **15, 16, 17**.

Maison Lessard is planned, like most Quebec houses, with a half-buried basement that contains most of the utilities and space for future expansion – the living facilities are on the main level. It looks ordinary, because it is ordinary – it has the plain simplicity of its back-country-road neighbours.

According to the original plan, all the walls, except in the basement, were to have been made with sulphur blocks. However, due to the shortage of time and an early winter, the use of sulphur blocks was limited to the exterior walls. The rigours of a northern climate complicate and reduce the advantages of block construction, compared with its use in tropical or temperate conditions. The hollow blocks used in the Maison Lessard are filled with granular insulation. Battens fixed on the interior carry plasterboard with fibreglass insulation behind. The roof is built with wooden trusses covered with asbestos-cement shingles. Interior partitions are wood-framed covered with plasterboard.

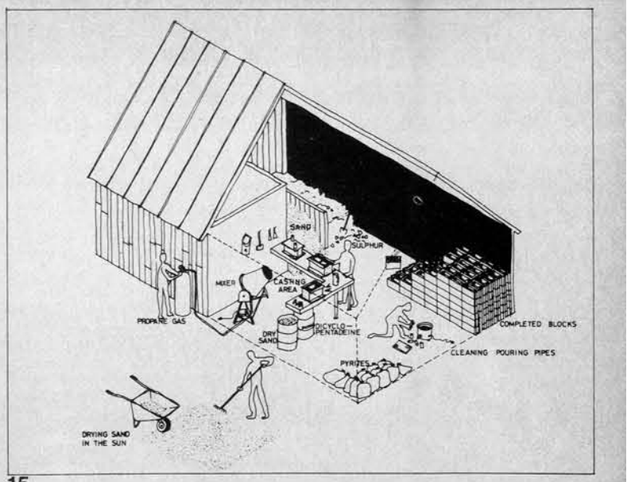
Septic tanks are often a poor solution for the disposal of human wastes as they tend to pollute the surrounding sub-soil and ground water. MCHG has been experimenting with low-cost autonomous sanitation. As part of this programme, a Swedish Clivus-Multrum composting toilet was installed in the basement. This unit, which consists of a decomposition chamber with chutes from the kitchen and the toilet, produces fertilizer. This particular model was produced by Clivus-Multrum in Maine, and is among the first such installations in Canada.

At the time of writing, the house was within a month of completion, and will be ready for its new occupants, six children and an elderly couple. The project has, on the whole, met our expectations. That eight enthusiastic teenagers with virtually no training nor supervision could manufacture durable building components indicates the extraordinary promise of this material for self-help applications. The erection of the walls has convinced us that interlocking blocks, such as were used in the earlier projects, **4**, are a better solution, and we plan to return to it in future work.

Sulphur building is in its infancy, and many problems are still to be resolved. But the baby is well, and, with Maison Lessard, on its feet. From now on it's one step at a time.

13

14



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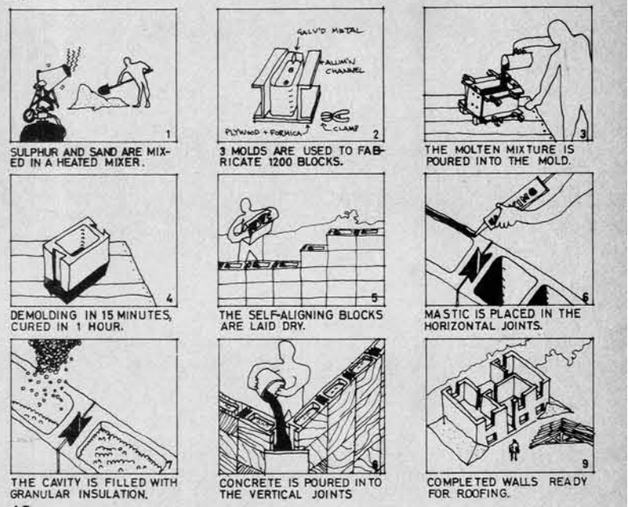


16

Building method	% Cost saving
Developer built	–
Owner-supervised and contractor-erected	10.9%
Owner-supervised and erected	30.3%
Owner-supervised and erected with owner-fabricated sulphur blocks	40.6%

These figures indicate that although additional savings of 10% can be made by the owner-builder who manufactures his own blocks, the advantages of sulphur building tend to be swallowed up by the high costs of services, insulation, heating and consumer quality finishes. In highly industrialised consumer-oriented countries, the advantages of a *primitive* building technology such as sulphur are less apparent than those to be experienced in Third World self-help applications.

17

13. Sulphur-concrete block mould – made from aluminium stock sections. Timber or steel moulds can also be used.

14. Self-aligning sulphur-concrete blocks. At Maison Lessard these blocks were laid without expert training in a bed of mastic. Vertical joints were reinforced with steel rods and filled with mortar; block cavities were later filled with granular insulation.

15, 16. The building process at Maison Lessard. Sulphur-concrete blocks were cast on the site. The whole construction process was carried out by unskilled teenagers.

17. Percentage saving in cost of sulphur building as compared with conventional construction (for a Canadian house in 1972).

Further reading

It is imperative for anyone seriously interested in sulphur applications or experimentation to go over the extensive literature that exists since Albert Wright of New Jersey took out the first patent for a sulphur-based building material in 1859. Almost all the references listed below are from journals or private reports, the more obscure of which can be obtained from organizations such as the Sulfur Institute (Washington and London) or the British Sulphur Corporation. A valuable source of information that is often ignored is the Patent Office. The most topical references are asterisked.

General
If you want to know what sulphur is and how it is mined:
Freeport Sulfur Company: *Freeport Sulfur Handbook* (New York, 1959).
*Pratt, CJ: 'Sulfur' in *Scientific American* May 70.

World Resources
Sulphur is found in many forms in different parts of the world; these publications will tell you where and how much:
Bodenlos, AJ: *Sulfur,* (US Geological Survey Prof. paper 820, Washington, 1973).
Pearse, GHK: 'Sulphur' in *Canadian Minerals Yearbook No. 45* (Department of Energy, Mines and Resources, Ottawa, 1971)
*Horseman, MNJ: *World sulphur supply and demand 1960-1980* (UNIDO Publication E.72.II.B.16, United Nations, New York, 1973).
US Bureau of Mines Report Inv. 7059: *Sulfur content of crude oils of the free world* (Washington, 1967).
British Sulphur Corporation Ltd.: *World survey of sulphur resources* (London, 1966).

Applications
These two reports provide a concise summary of new uses for sulphur outside its traditional applications in the fertilizer, plastics and chemical industries:
*Fike, HL: *Some potential applications of sulphur* (Sulfur Institute Pamphlet, Washington, 1972).
Vroom, AH: *Sulphur utilization – a challenge and a response* (National Research Council report 12241, Ottawa, 1971).

Early work
Before 1940 most of the interest in sulphur in terms of building materials was as a cement to point bricks in acid plants, and to a lesser extent as an impregnant. The best information source for this period is the Patent Office:
Benkowitz, I: 'Casting sulfur pipe' in *Ind & Eng Chem* Vol.30 (Jul 38).
Payne, CR & Duecker, WW: 'Construction with sulphur cement' in *Metallurgical Eng Journals* Vol.47 no.1 (Jan 40).
Wright, AH: *US Patent 25 074: Composition of matter for ornamental purposes* (9 Aug 1859).
Duecker, WW & Stengel, GE: *Review of the research activities of Major William H. Kobbe relating to the development of new uses for sulfur* (Unpublished report of the Texas Gulf Sulfur Company, New York, 1941).
Duecker, WW & Schofield, HZ: 'Results from the use of plasticized sulfur as a jointing material for clay products' in *Bulletin of the American Ceramics Society* Vol.16 (1937).
Kobbe, WH: 'Strengthening and indurating concrete with sulfur' in *Engineering New Records* 10 Jun 26.

Southwest Research Institute
The Southwest Research Institute (SWRI) began research into new uses for sulphur in 1962 and has pioneered the use of sulphur as a binding agent in surface-bonded block construction. They have recently built eight houses in Bogota and Cartegena using this technique.
'BuMines builds a sulfur house' in *Sulfur Institute Journal* Vol.9 No.3/4 (Washington, 1973).
Hubbard, SJ: *Feasibility study of masonry systems utilizing surface bond materials* (Department of US Army Corps of Engineers, Ohio River Division Lab, TR 4-43, Cincinnati, Ohio, Jul 66).
*Dale, JM & Ludwig, AC: 'Fire retarding elemental sulfur' in *SWRI Report 1967* (San Antonio).
*Dale, JM et al: *US Patent 3 823 019: Mine-wall coatings* (9 Jul 74).
Dale, JM & Ludwig, AC: 'Reinforcement of elemental sulfur' in *Sulfur Institute Journal* summer 69 (Washington).
Dale, JM: 'Sulfur-fibre coatings' in *Sulfur Institute Journal* vol.1, no.1 (Washington, 1965).
'Sulfur building revisited' in *Sulfur Institute Journal* vol.8, no.3 (Washington, 1972).
Testa, RB & Anderson, GB: *Use of sulfur in housing construction* (Columbia University report, New York, Dec. 69).
*Ludwig, AC: *Utilization of sulfur and sulfur ores as construction material in Guatemala* (UN report TAO/GUA/4, New York, Jul. 69).

Minimum Cost Housing Group
The Minimum Cost Housing Group (MCHG) was begun in 1970 and has developed techniques for producing, and building with, sulphur concrete, with particular emphasis on self-help. The following reports describe their findings:
Ortega, A, Rybczynski, W, Ayad, S, Ali, W & Acheson, A: *The Ecol Operation* (MCHG report no.2, Montreal, 1972).
Roads from sulphur (MCHG report no.4, Montreal, Feb. 74).
*Rybczynski, W, Ortega, A & Ali, W: *Sulphur concrete and very low cost housing* (MCHG report no.5, Montreal, 1974).
*Rybczynski, W & Morse, A: *Patent survey 1859-1974: the use of elemental sulphur in building* (MCHG report no.7, Montreal, 1975).

Some of the early work of MCHG is described in the following:
Boon, JJ: 'The Ecol Operation' in *AD* Apr. 73.
Ortega, A: 'The Ecol Operation' in *Sulfur Institute Journal* vol.1, no. (Washington, 1973).
*Beaudoin, JJ & Sereda, PJ: *The freeze-thaw durability of sulphur concrete* (Building research note no.92, National Research Council, Ottawa, Jun. 74).
*Rybczynski, W: 'From pollution to housing' in *AD* Dec. 73.
Ayad, S & Rybcyznski, W: 'Resarch for very low cost housing' in *Industrialization Forum* Dec 71 (Montreal).
'Sulphur concretes' in *Sulphur Institute Journal* vol.8, no.1/2 (Washington, 1972).
Rybczynski, W: 'A sulphur house at Saddle Lake' in *Sulphur Institute Journal* vol.10, no.1, (Washington, 1974).

For more intensive research, the following M.Arch. theses deal with the subject
Ayad, S: *The development of alternative uses for locally available building materials, particularly binding agents* (McGill University, Sep 71).
Boon, JJ: *Sulphur as an intermediate technology for housing within community development* (McGill University, Mar 74).
Hanna, MAM: *A survey of solid wastes and their current and potential uses in building construction* (McGill University, Mar 74).

Sulphur concrete
In addition to the work of MCHG, there are a few sources of information, primarily of an engineering nature:
Dale, JM & Ludwig, AC: *Feasibility study for using sulphur aggregate mixtures as a structural material* (SWRI report AFSL-66-67, San Antonio, Sep 66).
Malhotra, VM: *Mechanical properties and freeze-thaw resistance of sulphur concrete* (Dept. of Energy, Mines and Resources report IR-73-18, Ottawa, Jan 73).
Crow, LJ & Bates, RC: *Strength of sulphur-basalt concretes* (Mines Investigation report 7343, US Dept. of Interior, Spokane, Mar 70).
*Naval Civil Engineering Lab: *Sulphur concrete for Polar construction* (Technical note N-1200, Port Hueneme, California, Jan 72).

Impregnation with sulphur
Impregnation with sulphur offers possibilities for improving materials (waste cardboard?), and investigators in this area should not overlook the early work of Kobbe and Patton.
Kakos, MJ & Fitzgerald, JV: *US Patent 3 208 190: Ceramic tile* (28 Sept 65).
Malhotra, VN: *Development of sulphur infiltrated concrete* (Dept of Energy, Mines and Resources report MP1(A) 74-25, Ottawa, 974).
*Van den Akker, JA & Wink, WA: 'Experimental Paper House' in *The Paper Industry and Paper World* vol.30, no.2 (May 48).
Patton, RA: *The impregnation of wood with sulphur* (Unpublished report of Texas Gulf Sulphur Company, New York, Nov 49).
*Kobbe, WH: *US Patent 1 599 135: Method of improving the properties of wood* (7 Sep 26).
Platon, J: 'Sulphur impregnated concrete' in *Sulphur Institute Journal* vol.11, no.1 (Washington, 1975).
Thaulow, N: 'Sulphur impregnated concrete' in *Cement and Concrete Research* vol.4 (New York, 1974).

Foamed sulphur
There has not been as yet any investigation of the application of foamed sulphur to housing construction. If cheap organic foaming agents were developed it would offer interesting possibilities.
*'Foamed sulphur for road insulation trials in Canada' in *Sulphur Institute Journal* vol.10, no.3/4 (Washington, 1974).
Hodgson, GW: 'How to make foamed sulphur' in *Oilweek* 4 Jun 62.
Dale, JM & Ludwig, AC: 'Rigid sulphur foams' in *Sulphur Institute Journal* autumn 66 (Washington).
Dale, JD & Ludwig AC: *US Patent 3 337 355: Solid foamed sulphur and process for the manufacturing thereof* (27 Aug 67).

Sulphurized asphalts
All these references concern roadway construction but could help in the development of roofing membranes.
*Gallaway, BM & Saylak, D: *Beneficial uses of sulphur-asphalt pavements* (Texas A & M Research Foundation report, College Station, Texas, Jan 74).
Metcalf, CT: *UK Patent 1 076 866: Bituminous paving composition* (27 Sep 67).
Kennepohl, GJA, Logan, A & Bean, DC: *Conventional paving mixes with sulphur-asphalt binders* (paper presented to the Association of Asphalt Paving Technologists, Phoenix, Arizona, Feb 75).
Fenijn, J(Shell Canada Ltd): *Elemental sulphur in asphaltic paving mixes* (paper presented at Canadian Sulphur Symposium, Calgary, 1974).

MCHG's spiritual godfather. Buckminster Fuller at the Ecol experimental sulphur house.

MUD SWEAT + TEARS

'Mud, sweat and tears' is about the realities of disruption. Real cities can never be instant, and their growing pains are manifest from the day the first earth-scraper moves in. Then it's a case of mud in the kitchen, a fight for adequate bus services, a pious hope for early amenities and desperate frustration for implementors, as it becomes apparent that this immensely large project will take years to reach understandable coherence to immigrants and locals alike. Only time will allow the patina of community, amenity, order and maturity to cover its spare skeleton. This is a plea for breathing space, patience and rose-coloured spectacles.

Muddy welcome for early occupants – Bradville I.

1960 Werner Ruhnau/Yves Klein: Project for an aerial architecture

In 1923 *G* demanded: 'Economy. Pure relationship of strength and material.' In forty years the demand had lost none of its fascination. Bruno Taut's phrase concerning the 'light point' that had to be found was topical as never before. Buckminster Fuller asked: What does a building weigh? Lightweight structures were conquering a still limitless field. Fluid and gaseous materials were used in construction. A new sensibility was developing. The architect Werner Ruhnau (b. 1922 in Königsberg) and the painter Yves Klein (Le Monochrome) wanted to found a 'school of sensibility'. *ZERO* proclaimed: 'We live, we are for everything'. Ruhnau and Klein were for a life in aerial architecture.

'In our minds aerial architecture was always merely a stage that is proposed today for the air-conditioning of privileged geographical spaces.'

We propose protecting a city by a roof of moving air. A central motorway leads to the airport, dividing the city in two: a residential quarter and a quarter for work, industry and mechanical devices. The roof of air simultaneously air-conditions and protects the privileged space.

A floor of transparent glass. Storage underground (kitchens, bathrooms, store-rooms and production plant).

The concept of secrecy, which is still known to us, will have vanished from this city flooded with light and completely open to the outside world. A new condition of human intimacy will exist. The inhabitants live naked. The former patriarchal family system will no longer exist. The community will be complete, free, individual, impersonal. The inhabitants' main occupation: leisure.

The obstacles that used to be regarded in architecture as troublesome necessities will have become luxuries: fire-walls, water-walls, forms carried by the air, fire-fountains, water-fountains, swimming baths, air beds, air seats . . . The real goal of immaterial architecture: the air-conditioning of large geographical dwelling areas.

This air-conditioning will be achieved not so much through technological miracles as essentially through a transformation of human sensibility into a function of the cosmos. The theory of 'immaterialization' negates the spirit of fictitious science.

Through evolved sensibility, 'a new dimension, guided by the spirit', the climate and the spiritual conditions on the surfaces of our earth will in future be transformed.

'To want means to invent.' To this wanting is added the will to live what one has invented, and the miracle will be accomplished in all the realms of nature. Ben-Gurion: 'He who does not believe in miracles is not a realist.'

The Oblique Function
Paul Virilio

If physical nature is characterized by periodicity, the historical world is defined by polarity.

Moreover different types of human groupings have been of major importance in the successive modes of urbanization and thus in the origin of architectural forms.

This process of polarization (whose development need not be complicated here by more specific analysis) has, up to this point, accommodated the addition of individual dwellings in the town, then the addition of dwelling units in the apartment block, this then multiplied in all the apartment blocks of the city—each of these successive entities undergoing a change in volume, followed by universalization.

But these different modifications have above all resulted from an element that for a long time has wrongly been considered the effect of the others: orientation in space.

If the village was characterized by horizontality—a conquest of the soil broken only by the vertical aspiration of the church or chateau—the city has been but a succession of verticalities aimed at social conquest, New York being a culmination of this spatial direction.

If all the attempts to arrive at a new type of urban entity have failed, the garden city of the nineteenth century as well as the satellite city, it is because those who have been responsible for them have disregarded the predominance of an original axis of elevation as motive force for the other components of the whole.

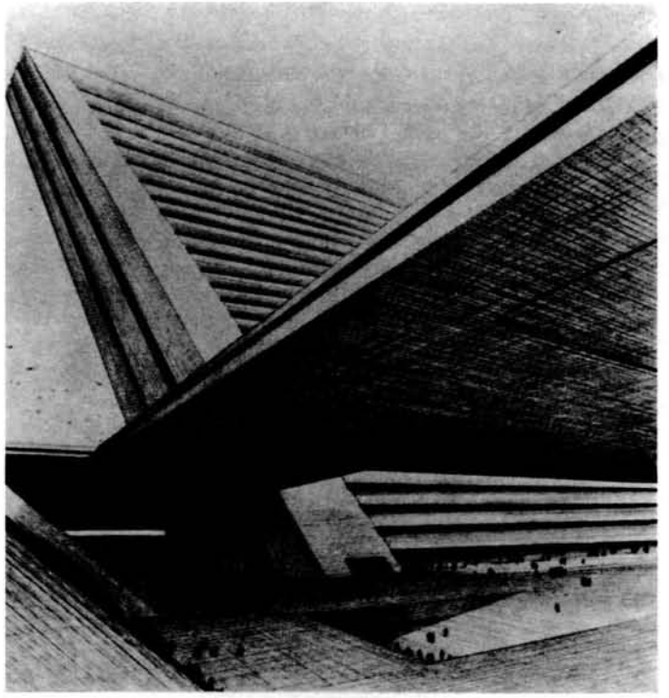
They have been fascinated by the additive aspect of human groupings, which is conditioned by the barbarism of industrial civilization in the process of coming into being.

Thus an urbanism of subjugation has succeeded an urbanism of reaction.

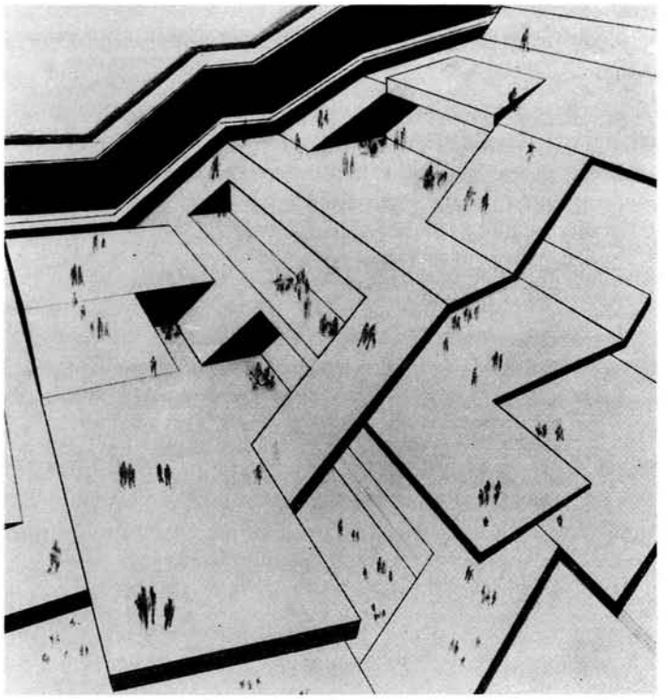
Important as are elements of number and type, it is now proven that they are powerless to realize a new mode of urbanization by themselves.

And we are now confronted by the overriding necessity to accept as a historical fact the end of the vertical as axis of elevation, the end of the horizontal as permanent plan, in order to defer to the oblique axis and the inclined plan, which realize all the necessary conditions for the creation of a new urban order and permit as well a total reinvention of the architectural vocabulary.

This tipping of the plane must be understood for what it is: the third spatial possibility of architecture.



Above: Interior detail. Below: Habitat on inclined plane.



Motion of May 15
Strike Committee, Ecole des Beaux-Arts

Wednesday, May 15, 12:00

Why are we prolonging the struggle? What are we fighting against? We are fighting against the class-based University; we want to organize the struggle against all its aspects:

1. We oppose the social discrimination that operates throughout the course of study, from the primary to the higher grades, to the disadvantage of working-class children and poor peasants.

We want to fight against the system of examinations and competitions, principal means of this discrimination.

2. We oppose the content of the teaching and the pedagogical forms in which it is disseminated. Everything is organized so as to ensure that the products of the system acquire neither critical consciousness nor knowledge of social and economic realities.

3. We oppose the role society expects intellectuals to play: to be watchdogs of the system of economic production, to be technocratic managers, to see to it that each person feels very happy with his lot, especially when he is being exploited.

What do these criticisms mean for the school of architecture? For the school of painting and sculpture? It is certainly up to the Commissions to define it precisely, but we can already do so as far as architecture is concerned:

- We want to contest the domination of the curriculum by the profession through the Conseil de l'Ordre and other corporate bodies. We are against the Masters system as a pedagogical method. We are against the conformist ideology disseminated by the system. The teaching of architecture must not solely consist of the repetition of what the master does, to the point where the student is finally a carbon copy.
- We want to fight against the conditions of architectural production, which in fact subordinate it to the interests of public or private developers. How many architects have agreed to carry out large or small Sarcelles? How many architects take into account in the notes they keep on their commissions the conditions of information, hygiene, and worker security on the construction site; and do it in such a way that any developer heeds their appeals? Everyone knows that there are three deaths a day in France in the construction industry.

- We want to contest the content of a curriculum that is particularly conservative, particularly irrational and unscientific, in which impressions and personal habits continue to prevail over objective knowledge.

The ideology of the prix de Rome is still alive.

In short we want to take stock of the real relations between the school and society; we want to fight against its class character.

We have to realize that we cannot fight this fight alone. We must not harbor illusions that the university will be able to establish within its faculties the seeds of real autonomy with respect to bourgeois society as a whole.

The university must fight side by side with the workers, who are the principal

victims of the social discrimination carried out by the system of instruction. The fight against the class-based university must be linked organically to the fight of all workers against the capitalist system of exploitation.

It is necessary for us to engage: to call into question the relations that now govern the profession and the curriculum:

- To challenge the present separation of the E.N.S.B.A. from university studies;
- To refuse to allow any form of preselection in admissions to the school;
- To contest the present system of examinations and competitions;
- To prepare for the workers' struggle;
- To prepare for the struggle against the reform decrees;
- To establish real links with the workers' struggle.

On all these questions, we must have the freest possible debates.

All teachers must speak out.
Organized forms of struggle must be found.

ALLES IST ARCHITEKTUR

Bau

1/2 1968

Begrenzte Begriffsbestimmungen und traditionelle Definition der Architektur und ihrer Mittel haben heute weitgehend an Gültigkeit verloren. Der Umwelt als Gesamtheit gilt unsere Anstrengung und allen Medien, die sie bestimmen. Dem Fernsehen wie dem künstlichen Klima, den Transportationen wie der Kleidung, dem Telephon wie der Behausung.
Die Erweiterung des menschlichen Bereiches und der Mittel der Bestimmung der Um-„Welt" geht weit über eine bauliche Feststellung hinaus. Heute wird gewissermaßen alles Architektur. „Architektur" ist eines dieser Medien.
Unter den verschiedensten Medien, welche heute unser Verhalten und unsere Umgebung definieren — als auch als Lösung bestimmter Probleme — ist „Architektur" eine Möglichkeit.
Der Mensch schafft künstlich Zustände. Dies ist die Architektur. Physisch und psychisch wiederholt, transformiert, erweitert er seinen physischen und psychischen Bereich, bestimmt er „Umwelt" im weitesten Sinne.
Seinen Bedürfnissen und seinen Wünschen gemäß setzt er Mittel ein, diese Bedürfnisse zu befriedigen und diese Wünsche und Träume zu erfüllen. Er erweitert sich selbst und seinen Körper. Er teilt sich mit.
Architektur ist ein Medium der Kommunikation.

Der Mensch ist beides — selbstzentriertes Individuum und Teil der Gemeinschaft. Dies bestimmt sein Verhalten.
Von einem primitiven Wesen hat er sich selbst mittels Medien kontinuierlich erweitert, seinerseits diese Medien kontinuierlich erweiternd.
Der Mensch hat ein Gehirn. Seine Sinne sind die Grundlage zur Wahrnehmung der Umwelt. Medien der Definition, der Festlegung einer (jeweils gewünschten) Umwelt beruhen auf der Verlängerung dieser Sinne.
Dies sind die Medien der Architektur.
Architektur im weitesten Sinne.

Enger gefaßt könnte man für den Begriff Architektur etwa folgende Rollen und Definitionen formulieren:
Architektur ist kultisch, sie ist Mal, Symbol, Zeichen, Expression.
Architektur ist Kontrolle der Körperwärme — schützende Behausung.
Architektur ist Bestimmung — Festlegung — des Raumes, Umwelt.
Architektur ist Konditionierung eines psychologischen Zustandes.

Jahrtausende erfolgte künstliche Veränderung und Bestimmung der Umwelt, als auch Klima- und Wetterschutz, primär durch *bauen,* wie auch das *Bauwerk* wesentlichste Manifestation und Expression war. Bauen war verstanden als Kreation eines dreidimensionalen Gebildes, das den Erfordernissen als Definition des Raumes, als schützende Umhüllung, als Gerät und Werkzeug, als psychisches Mittel und als Symbol entsprach. Die Entwicklung der Wissenschaft und Technologie, wie auch der Gesellschaft und ihrer Bedürfnisse und Forderungen hat uns mit ganz anderen Gegebenheiten konfrontiert. Andere und neue Medien der Umweltbestimmung entstanden.

Sind dies zuerst vielfach nur technologische Verbesserungen herkömmlicher Prinzipien und Erweiterungen der physischen „Bau-Materialien" durch neue Materialien und Methoden, so werden darüber hinaus etwa nichtstoffliche Mittel zur Raumbestimmung entwickelt. Eine Anzahl von Aufgaben und Problemen werden heute nur noch traditionellerweise durch Bauen, durch „Architektur" gelöst. Ist jedoch für viele Fragen die Antwort noch „Architektur", wie sie verstanden wurde, oder stehen uns nicht geeignetere Medien zur Verfügung?

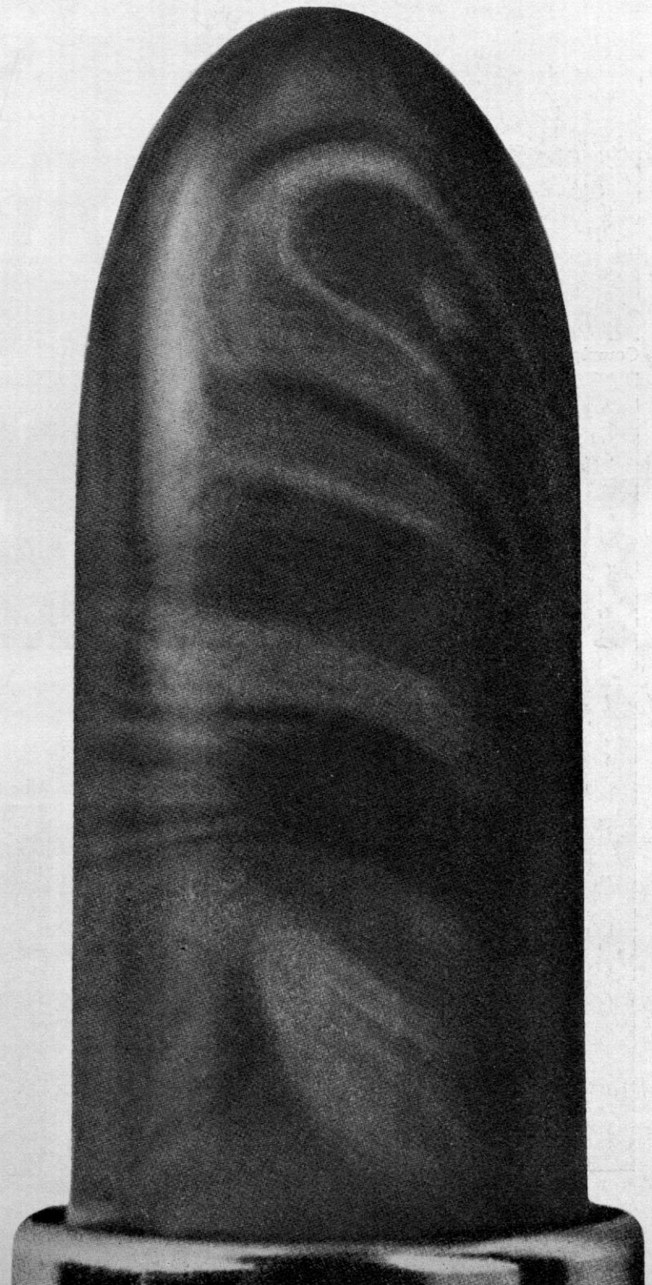
Architekten könnten in dieser Hinsicht einiges von der Entwicklung der Strategie lernen. Wäre diese derselben Schwerfälligkeit unterworfen gewesen wie die Architektur und ihre Konsumenten, so würde man heute noch immer Mauern und Türme bauen. Die Strategie hat jedoch die Bindung an das „Bauwerk" weitestgehend verlassen und zur Bewältigung ihrer Aufgaben und Forderungen neue Möglichkeiten herangezogen.
Ganz offensichtlich fällt es auch niemandem mehr ein, etwa Abflußkanäle zu mauern oder astronomische Geräte aus Stein zu errichten (Jaipur). Viel weitergehend jedoch sind die Konsequenzen, die etwa die neuen Medien der Kommunikation (sei es Telephon, Radio, Fernsehen u. a.) mit sich bringen, und es wird so ein Begriff wie der des Lehr- und Lerngebäudes (Schule) unter Umständen ganz verschwinden und durch diese Mittel ersetzt werden.
Architekten müssen aufhören, nur in *Bauwerken* zu denken.

Erwähnt sei auch die Verlagerung des Gewichtes von Bedeutung zu Wirkung. Architektur hat einen „Effekt". So wird auch die Art und Weise der Inbesitznahme, der Verwendung eines Objektes im weitesten Sinne wichtig. Ein Gebäude kann ganz Information werden, seine Botschaft könnte ebenso nur durch die Medien der Information (Presse, TV u. dgl.) erlebt werden. Tatsächlich erscheint es fast unwichtig, ob etwa die Akropolis oder die Pyramiden physisch existieren, da sie der Majorität der Allgemeinheit sowieso nicht durch eigenes Erlebnis, sondern durch andere Medien bewußt werden, ja ihre Rolle eben auf ihrem Informationseffekt beruht.
Ein Gebäude könnte also simuliert werden.

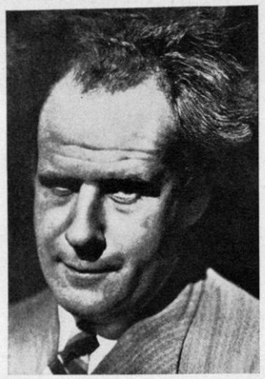
Frühe Beispiele der Extensionen der Architektur durch Kommunikationsmedien sind Telephonzellen — ein Gebäude minimaler Größe, doch eine globale Umwelt direkt einschließend. Umwelten dieser Art in noch engerem Bezug zum Körper und noch konzentrierterer Form liefern auch zum Beispiel die Helme der Düsenpiloten, die durch ihre telekommunikatorischen Anschlüsse die Sinne und Sinnesorgane erweitern, als auch weite Bereiche mit ihnen direkt in Beziehung bringen. Einer Synthese entgegen und zu extremen Formulierungen des Standortes einer heutigen „Architektur" führt schließlich die Entwicklung der Raumkapseln und insbesondere des Raumanzuges. Hier wird eine „Behausung" geschaffen, die weitaus perfekter als jedes „Gebäude" außerdem noch eine umfassende Kontrolle der Körperwärme, der Nahrungszufuhr und Fäkalienverwertung, des Wohlbefindens und dergleichen in extremsten Umständen bietet, verbunden mit einem Maximum an Mobilität.
Diese weitentwickelten physischen Möglichkeiten leiten dazu über, psychische Möglichkeiten einer künstlichen Umwelt verstärkt ins Auge zu fassen, da nach Wegfall der Notwendigkeit gebauter Umwelten (etwa Umhüllung, Klimaschutz und Raumdefinition) ganz neue Freiheiten erahnt werden. Der Mensch wird nun echt Mittelpunkt und Ausgangspunkt der Umweltbestimmung sein, da Einschränkungen durch eine geringe Zahl vorgegebener Möglichkeiten nicht mehr zutreffen.
Die Erweiterung der Medien der Architektur über den Bereich puren tektonischen Bauen und seiner Ableitungen hinaus begann mit Versuchen, insbesondere mit Zugkonstruktionen. Das Verlangen, unser „environment" nach Wunsch so geschwind und leicht als möglich zu verändern und es zu transportieren, ließ zum ersten Mal über einen weiteren Bereich von Materialien und Möglichkeiten Ausschau halten — zu Mitteln, die etwa in anderen Gebieten zum Teil schon seit langem Anwendung fanden. So haben wir heute „genähte" Architektur, wie es auch „aufgeblasene" Architektur gibt. Dies alles sind jedoch Mittel der Architektur, die im Grunde noch materiell, noch Bau-„Materialien" sind.
Wenig Versuche wurden jedoch gemacht, mit anderen als physischen Mitteln (etwa Licht, Temperatur, Geruch) unsere Umwelt zu definieren, Raum zu bestimmen. Hat hier schon die Verwendung herkömmlicher Verfahren weitgehende Erweiterungsmöglichkeiten, so sind diejenigen des Laser (Holograph) noch kaum vorauszusagen. Schließlich sind praktisch überhaupt keine Untersuchungen für die gezielte Verwendung von Chemikalien und Drogen sowohl zur Kontrolle der Körpertemperaturen und Körperfunktionen, als auch zur artifiziellen Schaffung einer Umwelt angestellt worden. Architekten müssen aufhören, nur in Materialien zu denken.
Die gebaute und physikalische Architektur wird, da nun im Gegensatz zu den wenigen und beschränkten Mitteln vergangener Epochen eine Vielzahl solcher zur Verfügung steht, sich intensiv mit Raumqualitäten und der Befriedigung psychologischer und physiologischer Bedürfnisse beschäftigen können und einen anderen Bezug zum Prozeß der „Errichtung" einnehmen. Räume werden deshalb weit bewußter etwa haptische, optische und akustische Qualitäten besitzen, Informationseffekte beinhalten, wie auch sentimentalen Bedürfnissen direkt entsprechen können.
Eine echte Architektur unserer Zeit ist daher im Begriffe, sich sowohl als Medium neu zu definieren, als auch den Bereich ihrer Mittel zu erweitern. Viele Bereiche außerhalb des Bauens greifen in die „Architektur" ein, wie ihrerseits die Architektur und die „Architekten" weite Bereiche erfassen.
Alle sind Architekten. Alles ist Architektur.

Hans Hollein

Alles ist Architektur



Roberto Matta Echaurren

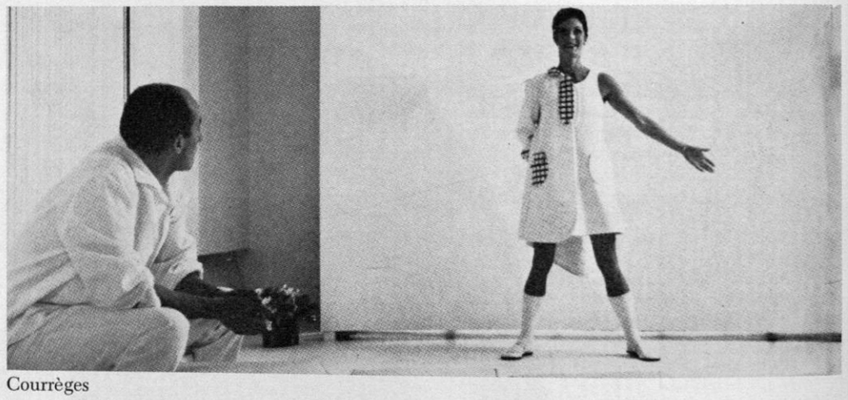

Sergej Eisenstein

Luis Trenker

Max Frisch

ARCHITEKTEN EX-ARCHITEKTEN

Marian Spichalsky


Courrèges

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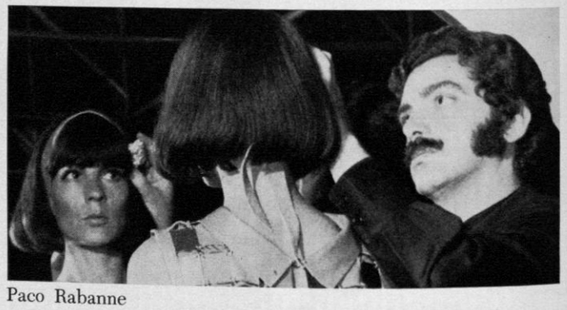
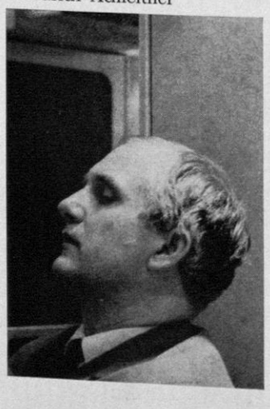

Paco Rabanne

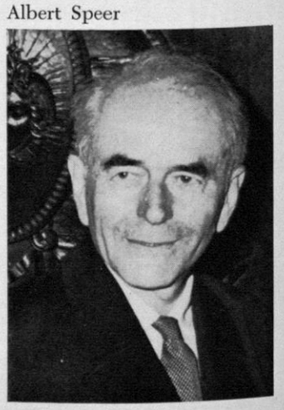
Fernando Belaunde-Terry

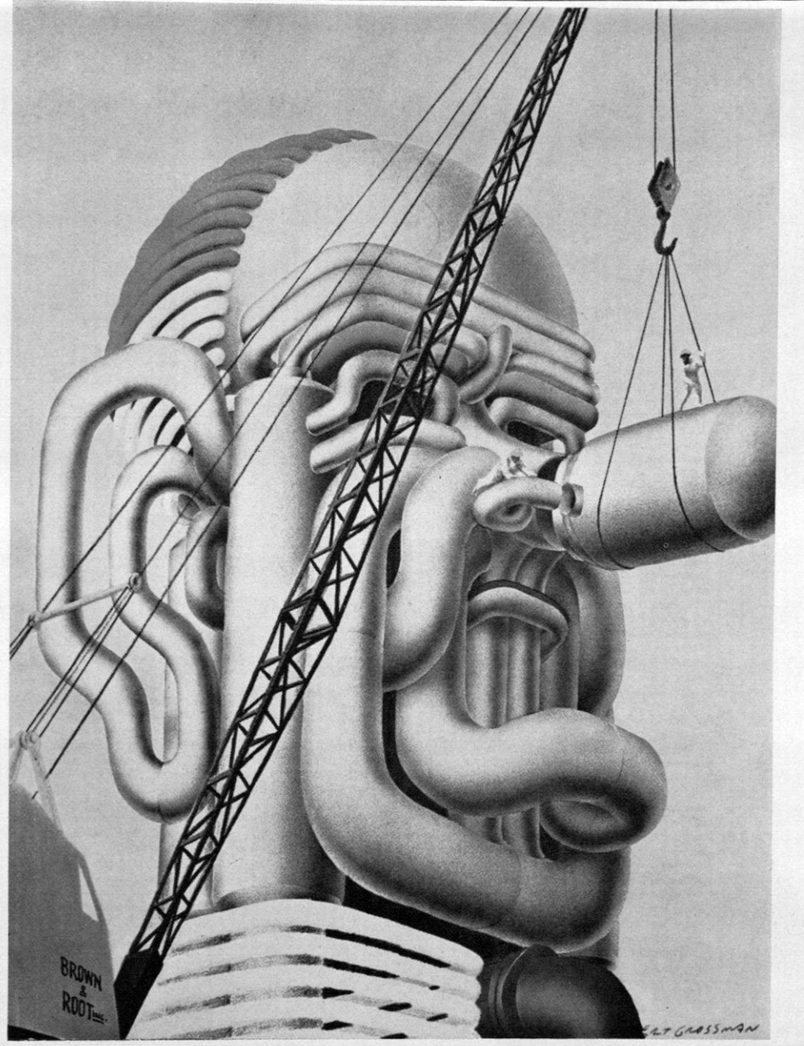
Simon Wiesenthal

Friedrich Achleitner



Albert Speer

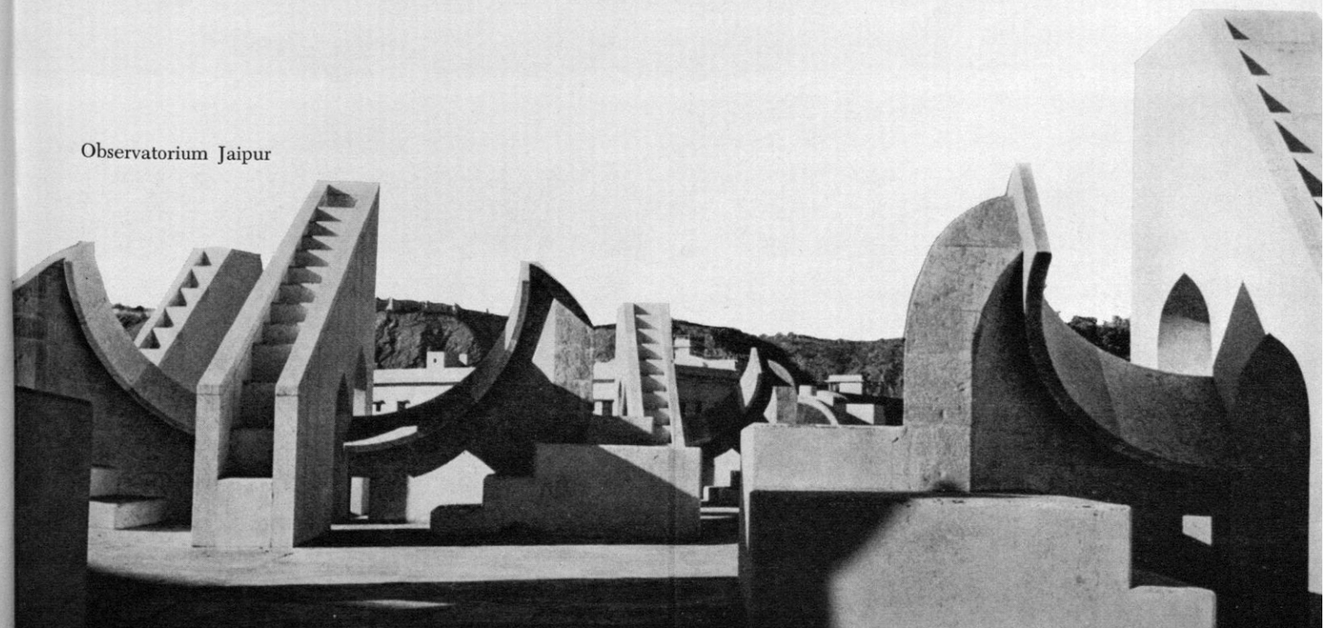


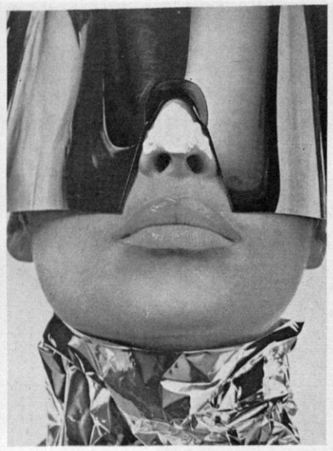


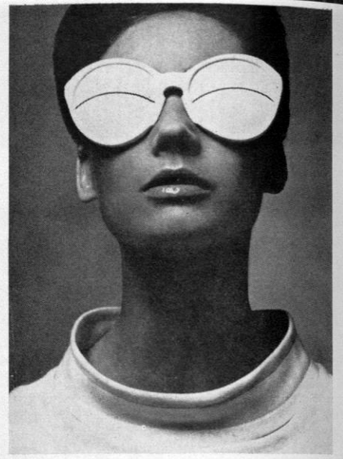
Robert Grossmann, 1967, Building LBJ
(aus Ramparts Magazine)

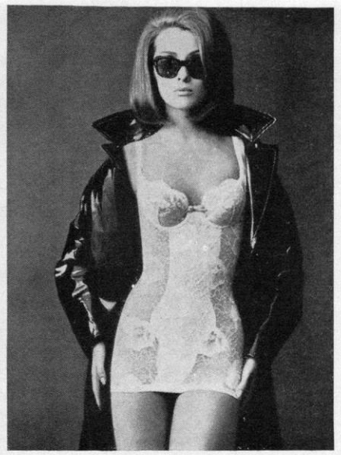
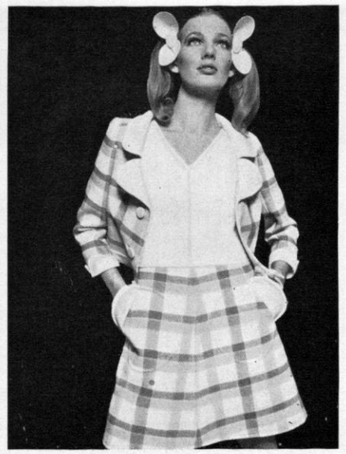
ALLES IST ARCHITEKTUR

Observatorium Jaipur







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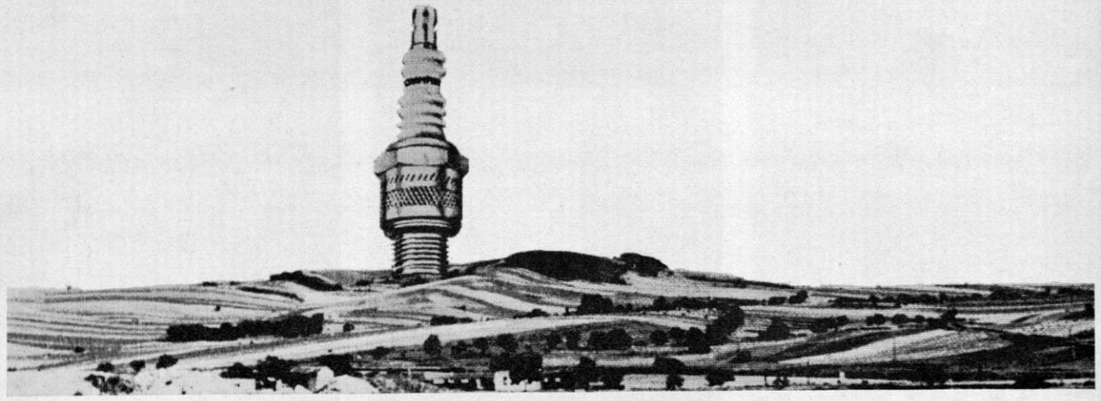
Aus einem Inserat der B. F. Goodrich Company.



Hans Hollein, 1964, High-rise-building (Collection Museum of Modern Art, New York)

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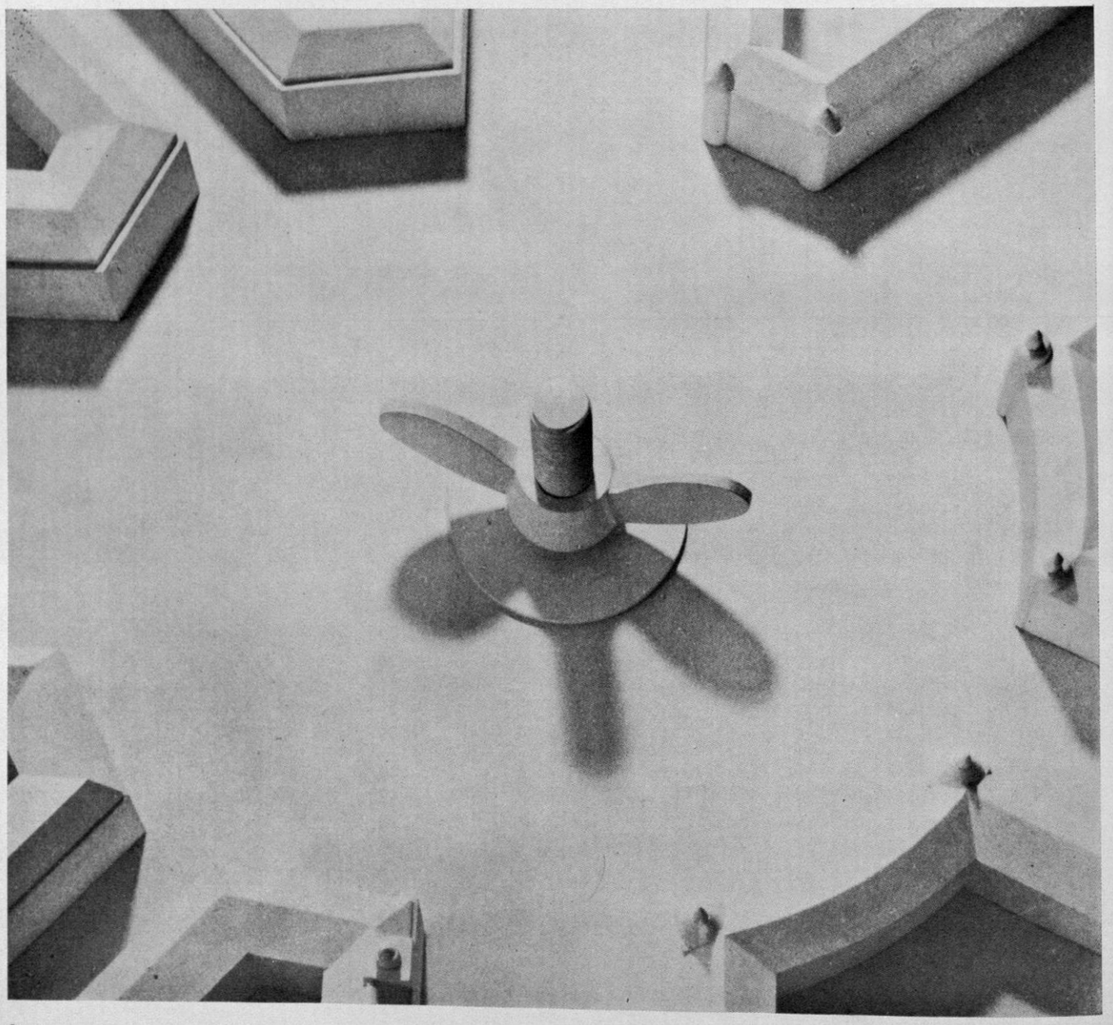
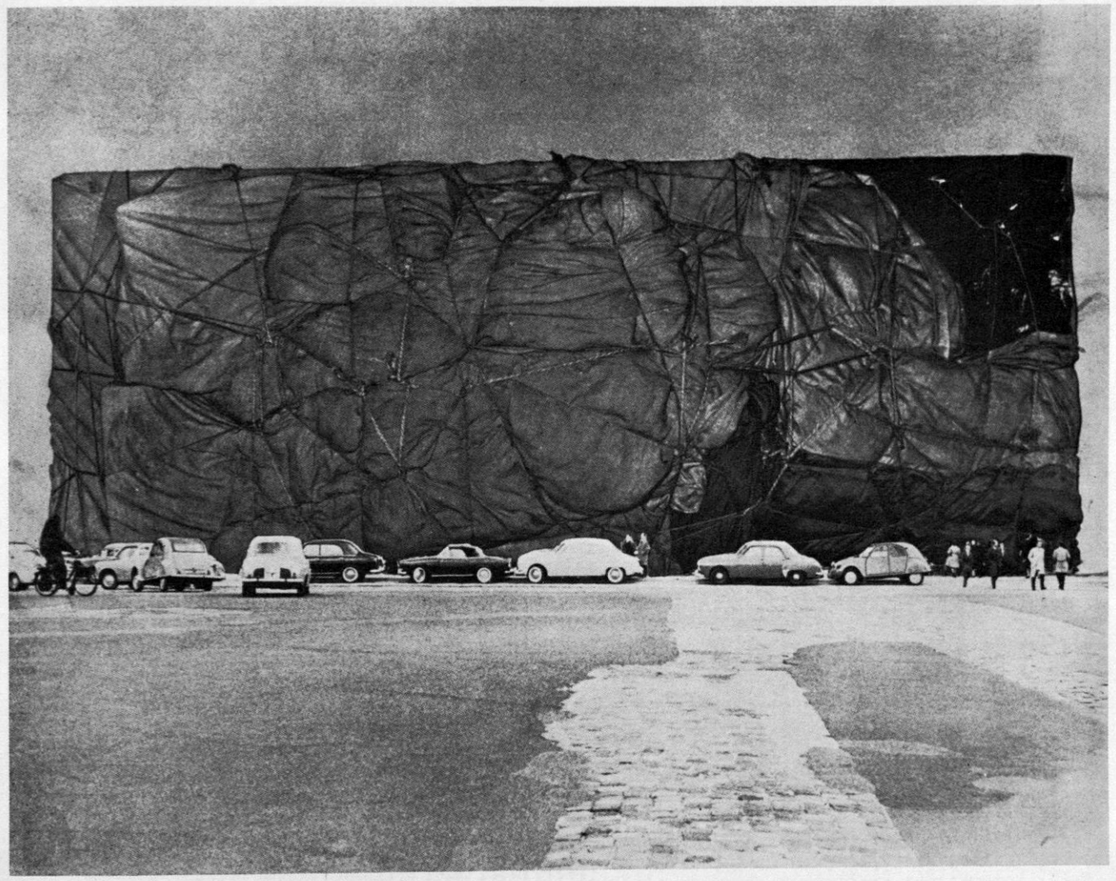
Claes Oldenburg, 1966, Die große Schraubenmutter, Monument für einen Platz in Stockholm.





Christo, 1963, projet pour un edifice public empaqueté

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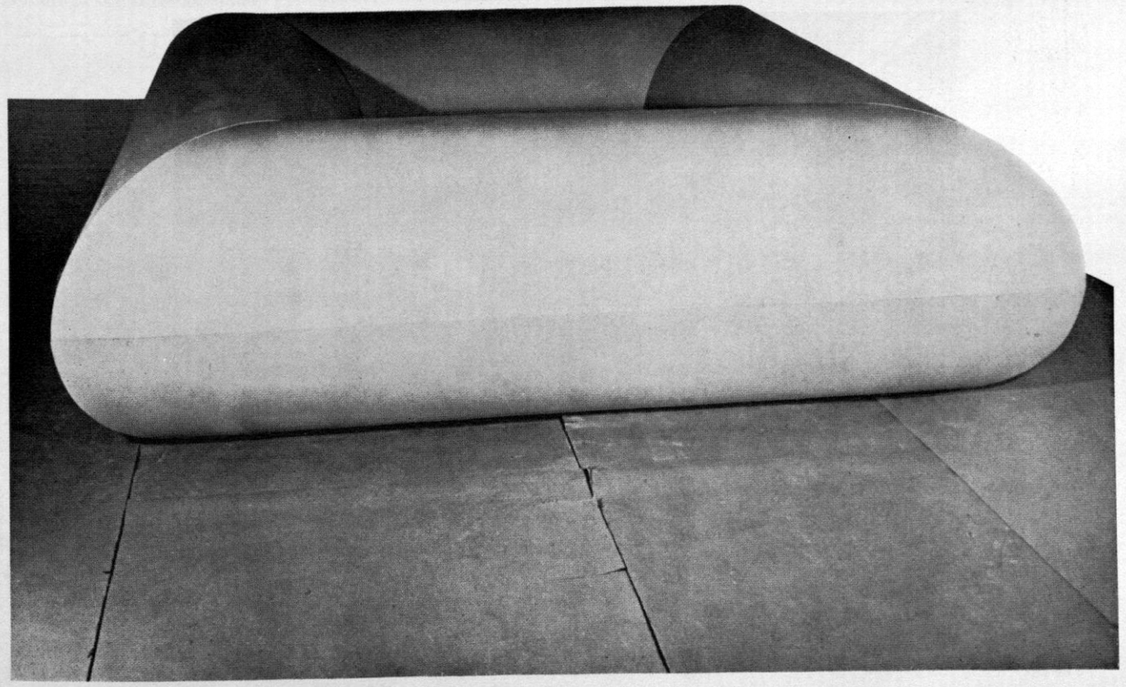
Bob Morris, 1967, Untitled, Collection Mrs. Albert List, New York



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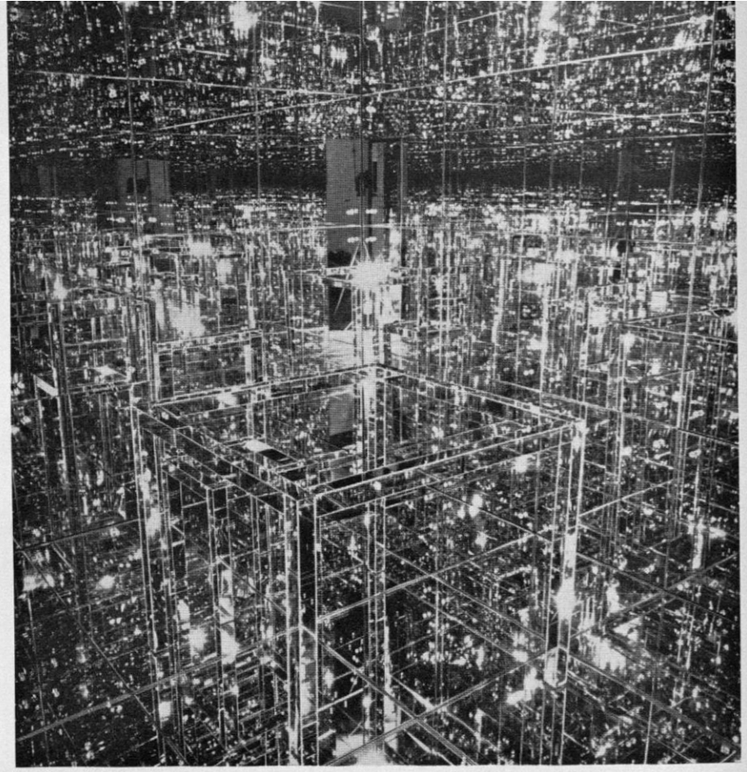
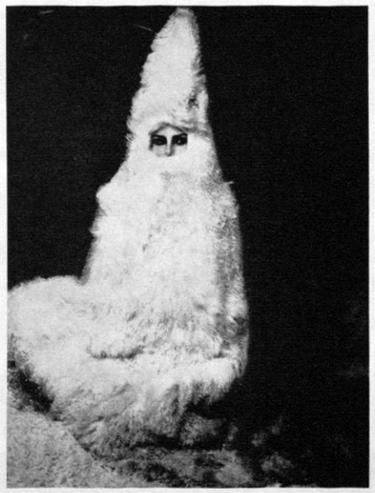
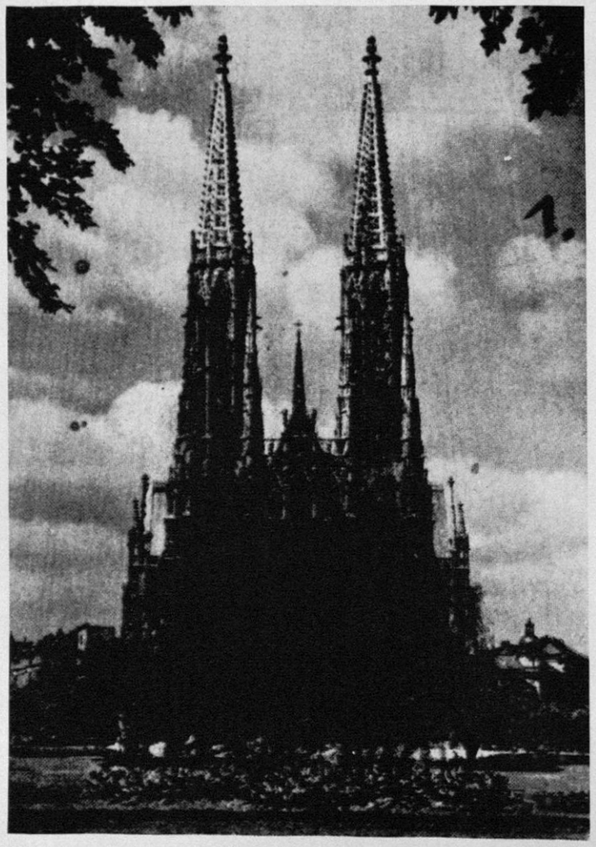
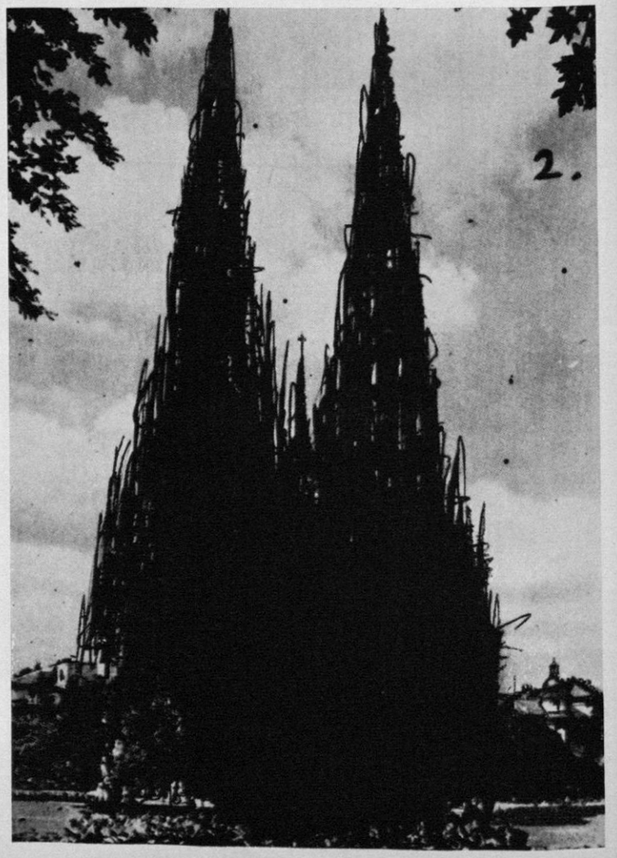


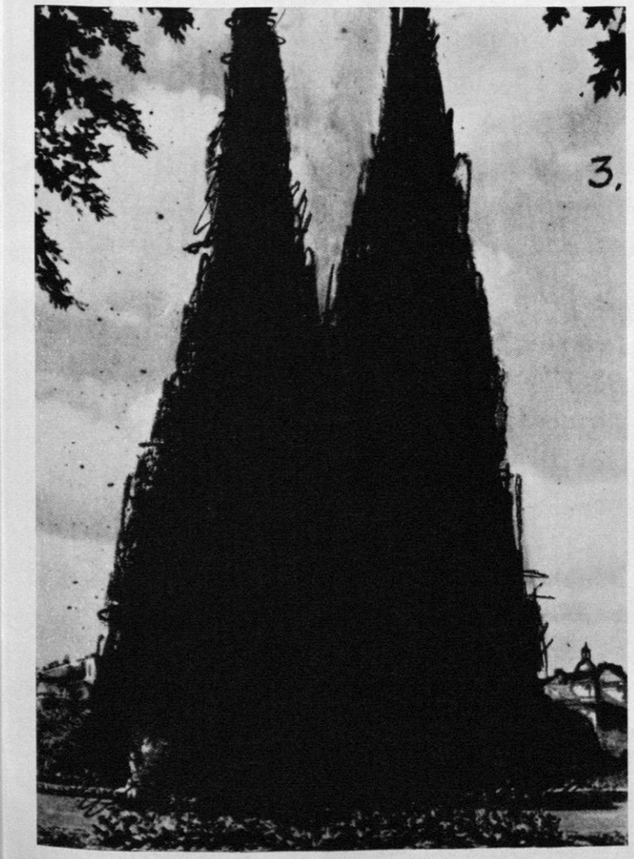
Lucas Samaras, 1966, Room 2

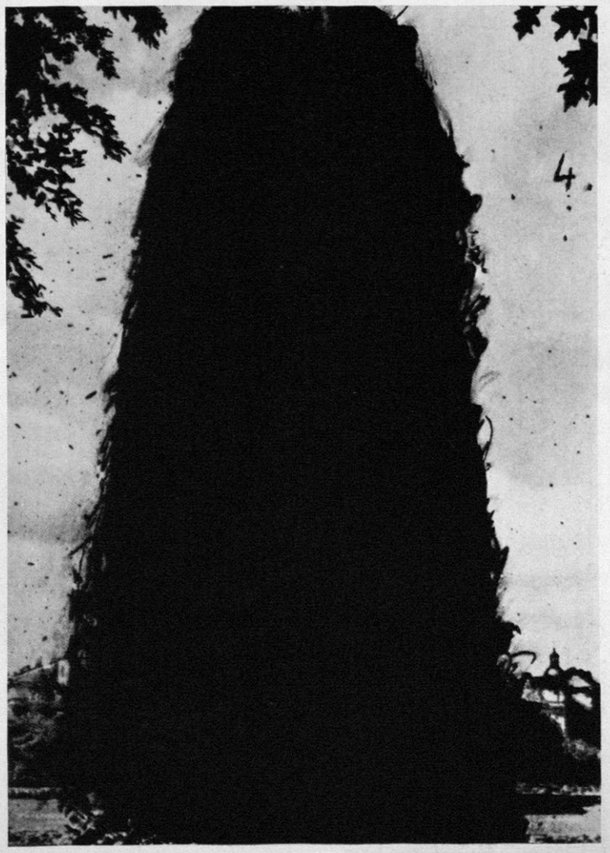


Arnulf Rainer, 1962, Überbauungen der Votivkirche



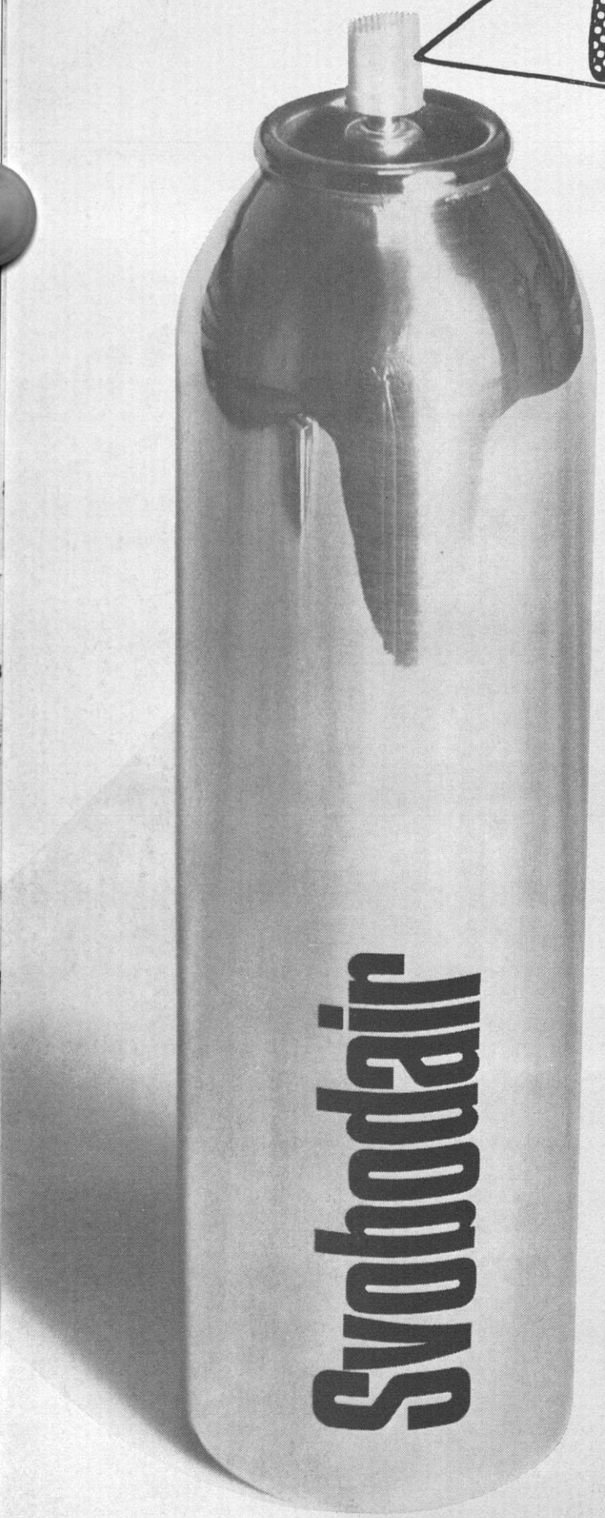






PFFT

and your surroundings change.



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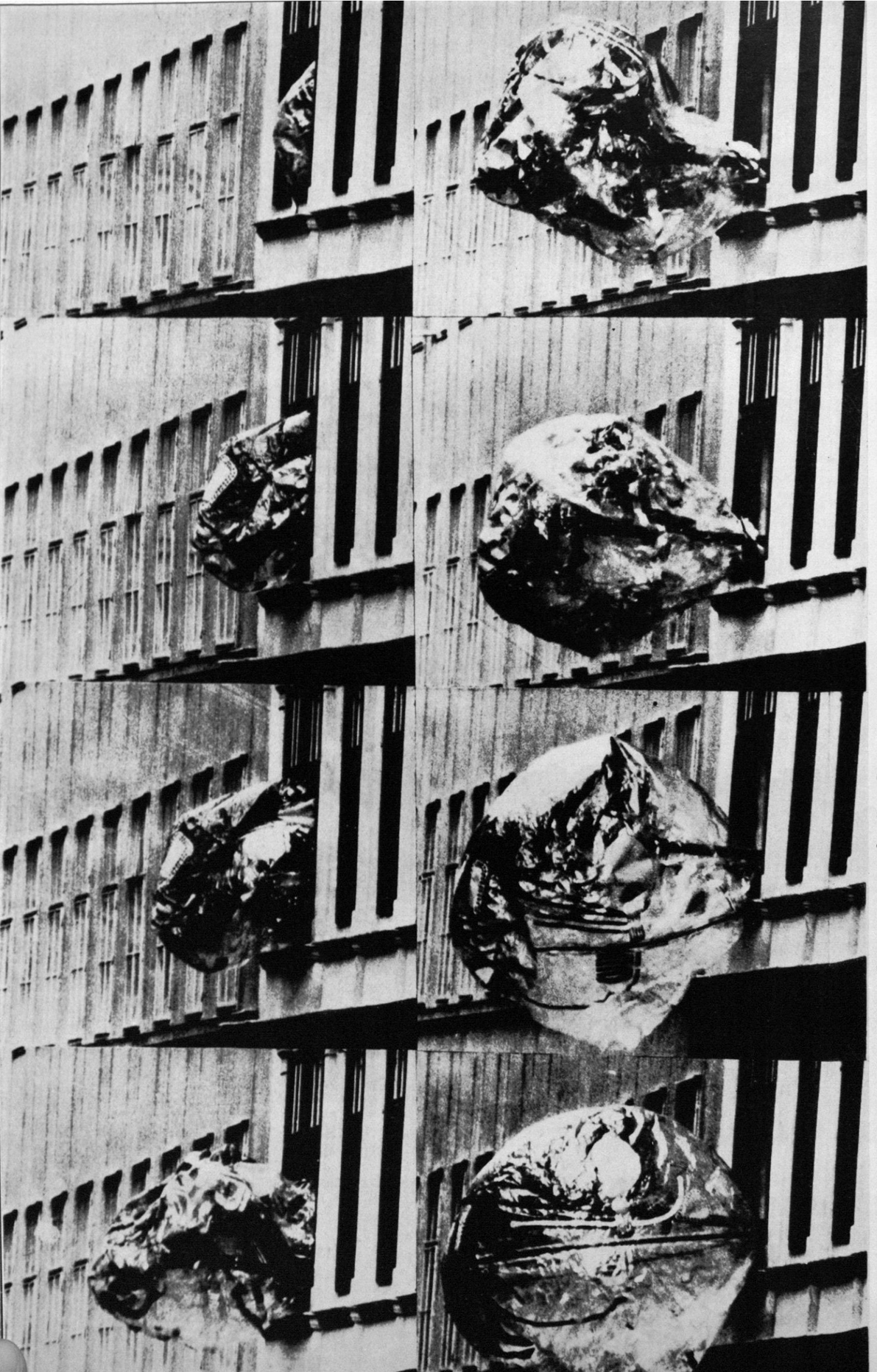


Haus-Rucker-Co, 1967, Balloon für 2, Mind-Expanding-Program mit dem Love-Protector

Wir unterbrechen hier unseren redaktionellen Teil für eine wichtige Mitteilung über . . .

·/·

bitte umblättern

Architektur

Hans Hollein
1967
aus dem
„Nonphysical Environmental Control Kit“
einer Bereitschaftsschachtel
zur Herstellung verschiedenster
gewünschter Umweltsituationen

Alles ist Architektur

Hans Hollein
1958
"Skyscraper"
Chicago

1. WE PRACTICE BABY-CHARMING

THEY CO[illegible] small children who vi[illegible] my [illegible] hand. They can be just as difficult as yo[illegible] baby, or that ba[illegible] chil[illegible] of your sister-in-law's!

I point thi[illegible] because pe[illegible]en say to me, "Oh, well, y[illegible] photograph *mod*[illegible] of cours[illegible] get unusual poses." The[illegible] is no such thing [illegible] among babies. I have had [illegible] learn something [illegible] babies, wh[illegible] they can do and can't do [illegible] various ages, ho[illegible] them, how to amuse the [illegible] and catch their [illegible].

These dev[illegible] I'm sure [illegible] just as useful to you wh[illegible] photographing [illegible] with simple lights, as they a[illegible] to me in my p[illegible] photographs of babies f[illegible] advertisers.

Therefore, [illegible] the very important matte[illegible] of lighting, let [illegible] rd nature of our youn[illegible] prima donnas. [illegible] let us divide the babies by ag[illegible] groups, and fin[illegible] various periods:

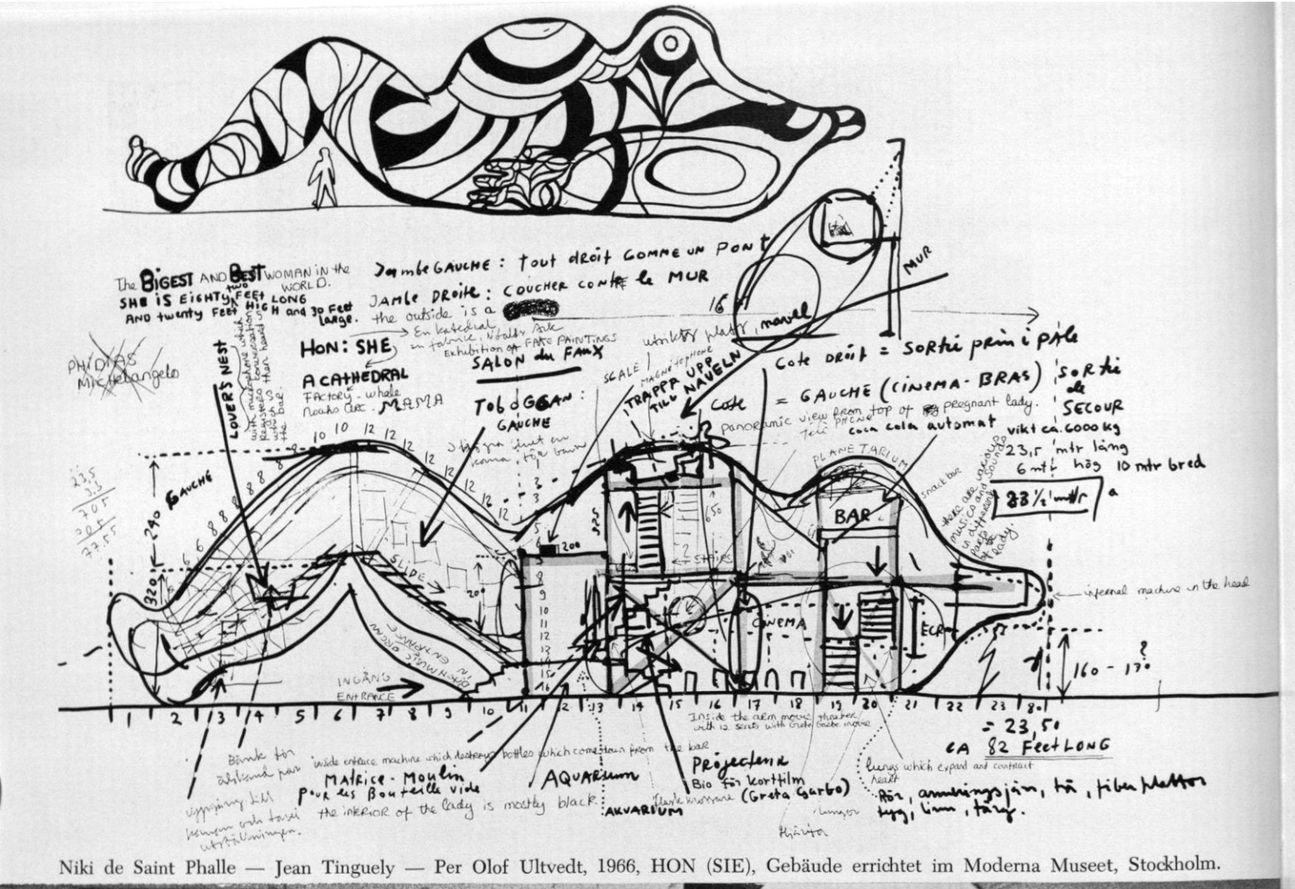
1—Fr[illegible]s.
2—Fr[illegible].
3—Fr[illegible]ns.
4—Fr[illegible]ears.
5—Fr[illegible] years.

When they are [illegible] call them babies any more.

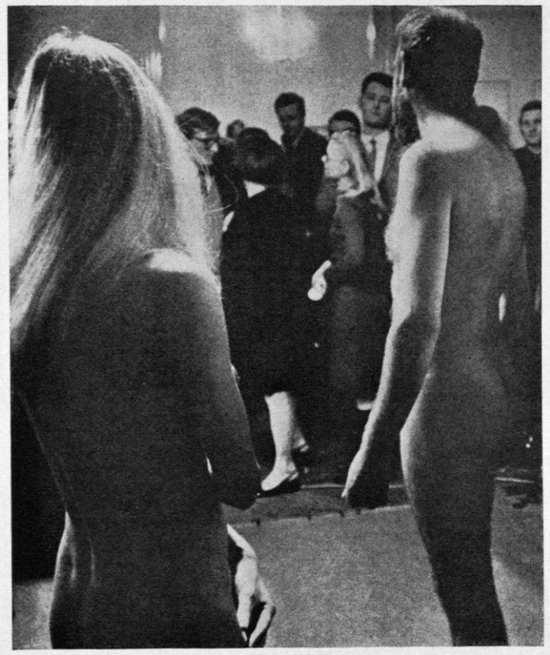
At 5 or 6 [illegible] hold up that wobbly head, he stops that blank [illegible] the world with interest, those fists have uncu[illegible] he gr[illegible] reaches, clutches. He can lift himself up on hi[illegible] although not for long. He likes to be held or p[illegible] lumpling sitting position. He enjoys songs, [illegible] your foolish conversation if it is quiet. H[illegible] tle him. And how he does approve of a t[illegible]

The busi[illegible] feet, mouth, eyes, ears, is quite a study [illegible] used to a new body only 6 months old. S[illegible] a fine pastime, but that photographer is al[illegible] you out of it, for some reason.

Of course you get your lamps set up, your camera focused on a pillow placed on the table where you expect to pose the baby, and of course you wait until the baby has had his nap, has been fed and properly "burped" and has been rendered any other necessary

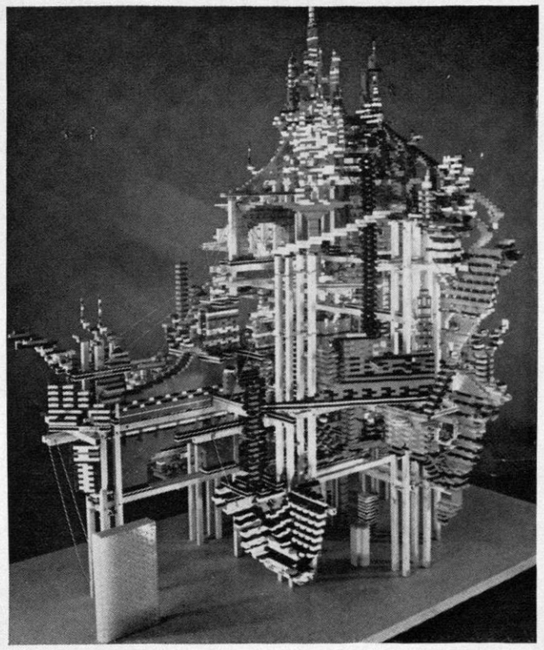


Niki de Saint Phalle — Jean Tinguely — Per Olof Ultvedt, 1966, HON (SIE), Gebäude errichtet im Moderna Museet, Stockholm.



Protest gegen Architektur

Der Maler Fritz Hundertwasser demonstriert in München gegen die heutige Architektur.

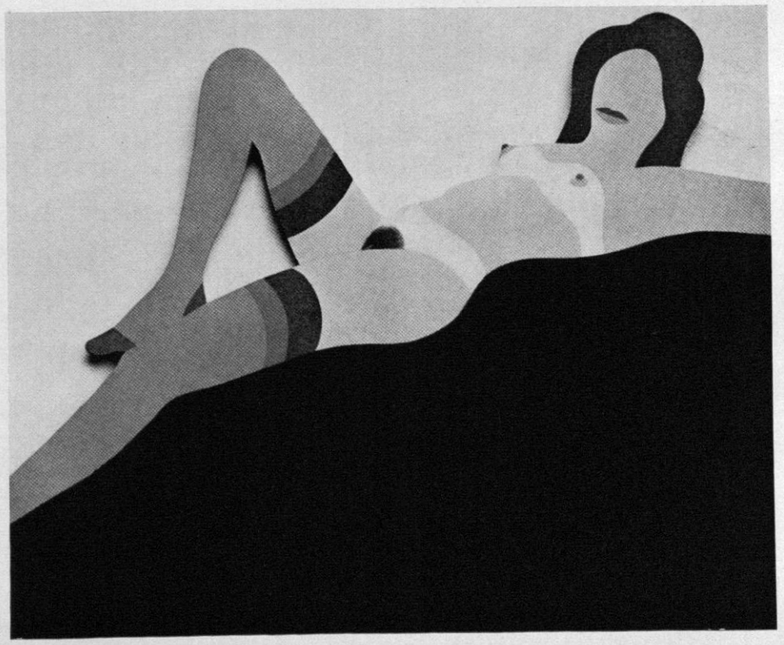


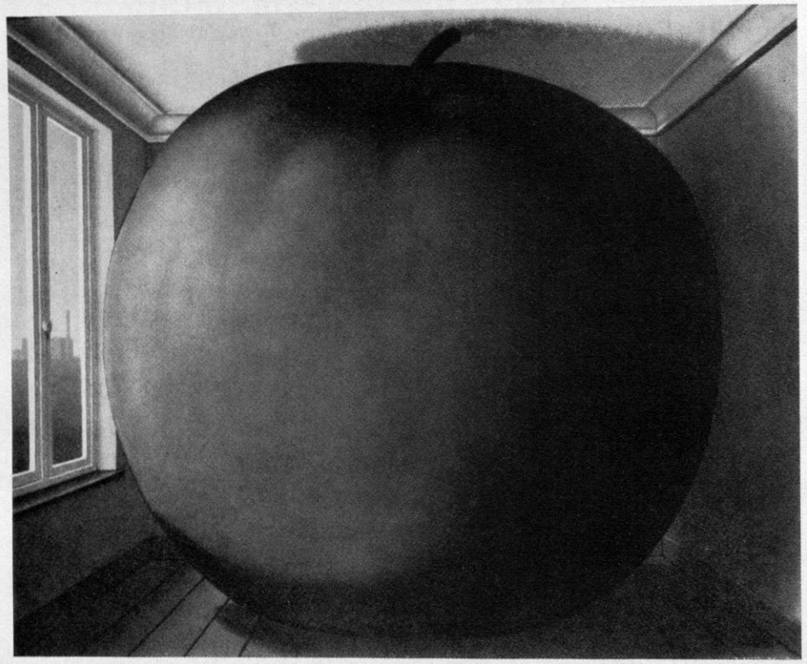
Protest gegen Architektur

Der Schriftsteller Norman Mailer konzipiert ein neues Manhattan in Weiterführung seiner schriftlichen Polemiken gegen die heutige Architektur (Modellfoto, links im Vordergrund das UN-Buliding).

Protest

Tom Wesselmann, 1966, Great American Nude Nr. 81 (Sidney Janis Gallery)

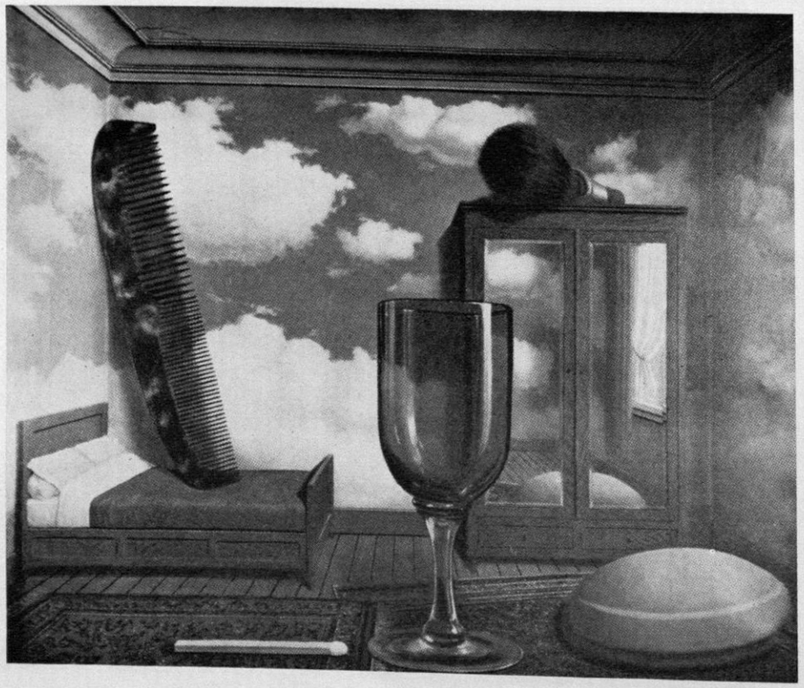


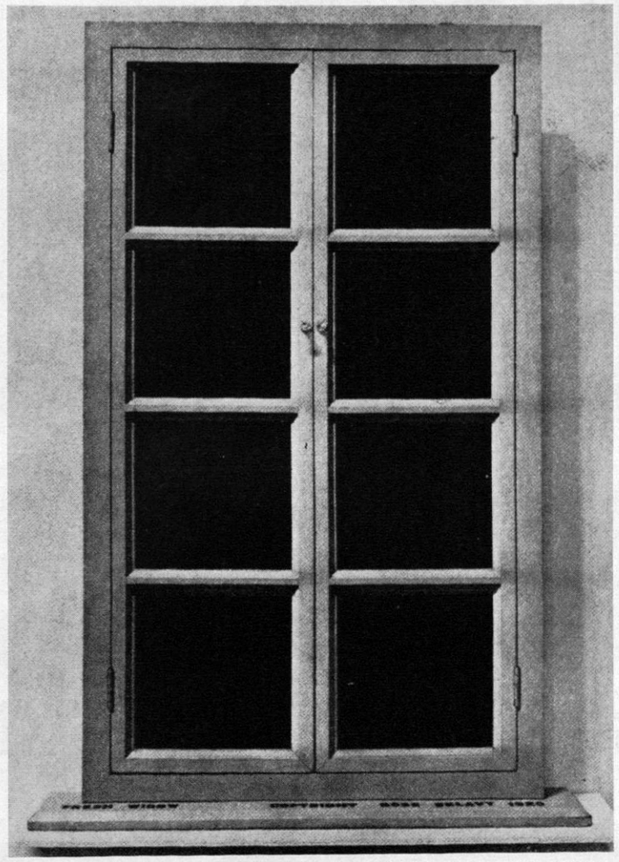


René Magritte, 1953,

ALLES IST ARCHITEKTUR

René Magritte, 1952

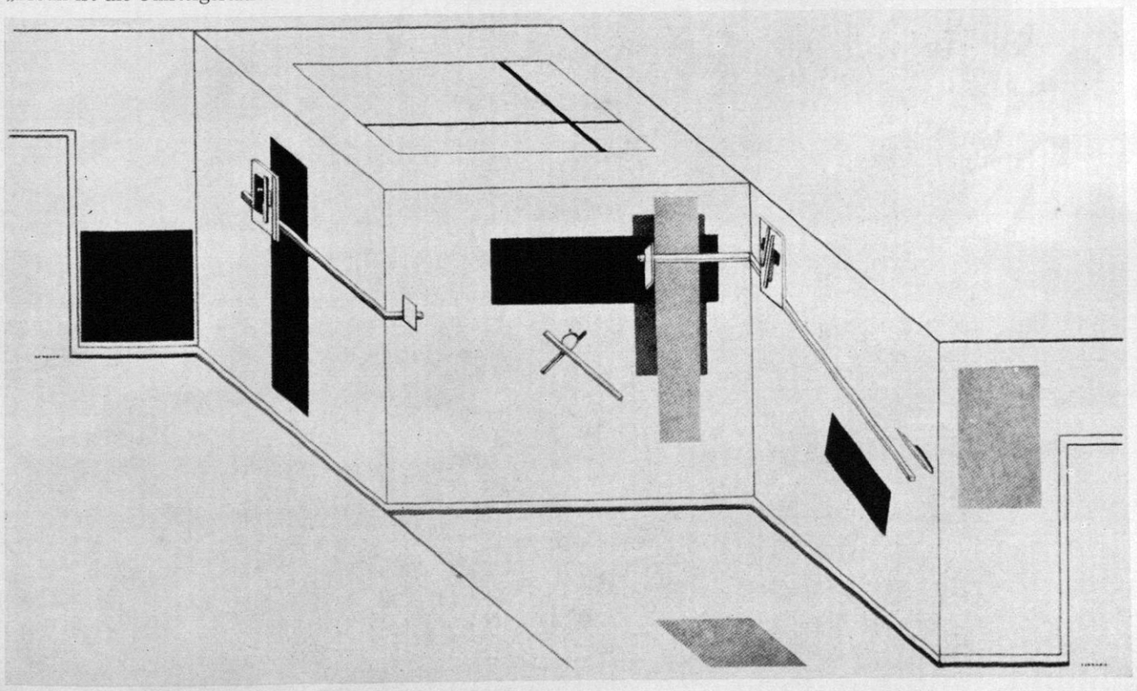




Marcel Duchamp, 1920, Fresh Widow

ALLES IST ARCHITEKTUR

El Lissitzky, 1929
Prounenraum, Große Berliner Kunstausstellung 1923
„Proun ist die Umsteigestation von Malerei nach Architektur."



Everything Is Architecture

Hans Hollein

Limited and traditional definitions of architecture and its means have lost their validity. Today the environment as a whole is the goal of our activities—and all the media of its determination: TV or artificial climate, transportation or clothing, telecommunication or shelter.

The extension of the human sphere and the means of its determination go far beyond a built statement. Today everything becomes architecture. "Architecture" is just one of many means, is just one possibility.

Man creates artificial conditions. This is Architecture. Physically and psychically man repeats, transforms, expands his physical and psychical sphere. He determines "environment" in its widest sense.

According to his needs and wishes he uses the means necessary to satisfy these needs and to fulfill these dreams. He expands his body and his mind. He communicates.

Architecture is a medium of communication.

Man is both—self-centered individual and part of a community. This determines his behavior. From a primitive being, he has continuously expanded himself by means of media which were thus themselves expanded.

Man has a brain. His senses are the basis for perception of the surrounding world. The means for the definition, for the establishment of a (still desired) world are based on the extension of these senses.

These are the media of architecture—architecture in the broadest sense.

To be more specific, one could formulate the following roles and definitions for the concept "Architecture":

Architecture is cultic; it is mark, symbol, sign, expression.

Architecture is control of bodily heat—protective shelter.

Architecture is determination—establishment—of space, environment.

Architecture is conditioning of a psychological state.

For thousands of years, artificial transformation and determination of man's world, as well as sheltering from weather and climate, was accomplished by means of *building*. The *building* was the essential manifestation and expression of man. Building was understood as the creation of a three-dimensional image of the necessary as spatial definition, protective shell, mechanism and instrument, psychic means and symbol. The development of science and technology, as well as changing society and its needs and demands, has confronted us with entirely different realities. Other and new media of environmental determination emerge.

Beyond technical improvements in the usual principles, and developments in physical "building materials" through new materials and methods, intangible means for spatial determination will also be developed. Numerous tasks and problems will continue to be solved traditionally, through building, through "architecture." Yet for many questions is the answer still "Architecture" as it has been understood, or are better media not available to us?

Architects have something to learn in this respect from the development of military strategy. Had this science been subject to the same inertness as architecture and its consumers, we would still be building fortification walls and towers. In contrast, military planning left behind its connection to building to avail itself of new possibilities for satisfying the demands placed upon it.

Obviously it no longer occurs to anyone to wall-in sewage canals or erect astronomical instruments of stone (Jaipur). New communications media like telephone, radio, TV, etc. are of far more import. Today a museum or a school can be replaced by a TV set. Architects must cease to think only in terms of *buildings.*

There is a change as to the importance of "meaning" and "effect." Architecture affects. The way I take possession of an object, how I use it, becomes important. A building can become entirely information—its message might be experienced through informational media (press, TV, etc.). In fact it is of almost no importance whether, for example, the Acropolis or the Pyramids exist in physical reality, as most people are aware of them through other media anyway and not through an experience of their own. Indeed, their importance—the role they play—is based on this effect of information.

Thus a building might be *simulated* only.

An early example of the extension of buildings through media of communication is the telephone booth—a building of minimal size extended into global dimensions. Environments of this kind more directly related to the human body and even more concentrated in form are, for example, the helmets of jet pilots who, through telecommunication, expand their senses and bring vast areas into direct relation with themselves. Toward a synthesis and to an extreme formulation of a contemporary architecture leads the development of space capsules and space suits. Here is a "house"—far more perfect than any building—with a complete control of bodily functions, provision of food and disposal of waste, coupled with a maximum of mobility.

These far-developed physical possibilities lead us to think about psychic possibilities of determinations of environments. After shedding the need of any necessity of a physical shelter at all, a new freedom can be sensed. Man will now finally be the center of the creation of an individual environment.

The extension of the media of architecture beyond pure tectonic building and its derivations first led to experiments with new structures and materials, especially in railroad construction. The demand to change and transport our "environment" as quickly and easily as possible forced a first consideration of a broad range of materials and possibilities—of means that have been used in other fields for ages. Thus we have today "sewn" architecture, as we have also "inflatable" architecture. All these, however, are still material means, still "building materials."

Little consequent experimentation has been undertaken to use nonmaterial means (like light, temperature, or smell) to determine an environment, to determine space. As the use of already existing methods has vast areas of application, so could the use of the laser (hologram) lead to totally new determinations and experiences. Finally, the purposeful use of chemicals and drugs to control body temperature and body functions as well as to create artificial environments has barely started. Architects have to stop thinking in terms of buildings only.

Built and physical architecture, freed from the technological limitations of the past, will more intensely work with spatial qualities as well as with psychological ones. The process of "erection" will get a new meaning, spaces will more consciously have haptic, optic, and acoustic properties, and contain informational effects while directly expressing emotional needs.

A true architecture of our time will have to redefine itself and expand its means. Many areas outside traditional building will enter the realm of architecture, as architecture and "architects" will have to enter new fields.

All are architects. Everything is architecture.

THE LOGIC OF USELESSNESS (1971)

In the summer of 1971, the bastard architecture URBOT was spawned by a city suffused with a sense of listlessness arising from its faith in, and resignation to dominance by, technology. Its full name is URBAN ROBOT.

Over a period of two years, URBOT had quietly observed the movements of society. In the same way that insects flitting about in the air first spend long larval periods underground, awaiting their turn, he held his breath and observed every detail of the movements around him. The urban spaces in his surroundings were undergoing great transformations. Multistorey buildings made of huge steel frames were taking shape, their outer surfaces clad with white, scale-like, precast concrete units, while endless dreary plazas and parks were being created, based on a blind faith that salvation would be assured by chanting 'community, community' like a mantra.

From what URBOT could gather, if developments continued to optimistically extend in the same direction, Tokyo's fate would be to take on the form of a 'mechanistoria': a city endowed with vast, extensive management mechanisms under the perfect control of a 'town brain' comprising large-scale computers and robots equipped with all manner of information devices.

There, within dwelling capsules that acted as information terminals, each individual person would have sex, eat and sleep.

If URBOT were able to function as an elite next-generation architecture – one of a group of competent urban robots, acting as a terminal within an individual dwelling as well as serving as a community information portal – this would result in an integrated human–machine system.

Having been implemented by manufacturing mechanisms that place absolute confidence in technology, he would undoubtedly be accepted by society.

However, while sensing the appeal of having powerful information devices installed within himself, URBOT was hesitant. It was similar to the desire to avoid becoming a businessman in a major corporation. His hesitancy was not an ideological confusion arising from being inserted in an enormous administrative apparatus, but was provoked by the non-mechanical, non-technological, irrational emotions that roiled within him.

In his eyes, the image of a 'mechanistoria' informational city was nothing more than the collective illusion of a homogeneous world, whereas he could only feel reality in those spaces that transmitted the warmth of human breath and corporeality.

One of Stanislaw Lem's novels, titled *The Invincible*, deals with natural selection among autonomous, self-replicating machines. A spaceship alights on the science-fiction setting of the planet Regis III to discover that every living thing has been annihilated and the planet has been occupied by autonomous machines that are able to reproduce, causing natural selection to occur among them. As a result, there are just two remaining types of autonomous machines now locked in a battle for survival. The first has a shape like an extremely small insect, and during combat they merge into an enormous mass that resembles a dark cloud spilling across the sky, disabling their opponents' information-exchange mechanisms. The second is an immobile machine that absorbs solar energy through an unusual organ like a triangular metallic plate, and possesses the reproductive power of a huge colony, like a metal forest. Ultimately, the second type loses the struggle for existence and becomes a vast ruin, like a metallic city, and a grand battle unfolds between the crew of the spaceship and the surviving machines – though with no chance of success for the humans. Some parallels could be drawn between the imagery of Lem's science-fiction world and the incredible ongoing expansion of the bizarre

urban future that is named Tokyo. Comprising a countless number of uniform cuboid cells, it gives the impression of an eternal battle between vertically extending steel-framed skyscrapers and low-rise concrete dwellings covering the ground surface. This battle ends with the victory of the skyscrapers, equipped with advanced control mechanisms and innumerable capsules clinging to their scattered, soaring steel frames, like an abundant grape harvest spilling from overflowing shelves. Below is a concrete desert of crumbling white sand endlessly stirred by a freezing wind, the remnants of abandoned capsules buried in the sand like rotting fruit. While people contort their bodies within the cramped capsules, encircled by all manner of information terminals, peals of eerie vibrato laughter may be heard between the thickets of metal trees.

The unhappiness arising from URBOT's hesitation to embed information terminals within his body originates in the misapprehension of a genealogy of ideas that could also be described as his parents.

The architectural world of the 1970s was in a chaotic state – blending, resisting and adapting theories about information cities, capsules, community, paranoia, pop architecture, design surveys, systems, customs, utopias, vernacularism and so on. Mediated by the concept of spatial control, this situation was exemplified, for instance, by the ingenious coordination of the conventional image of the informational city and the psychedelic acid-trip world depicted in Tom Wolfe's *The Electric Kool-Aid Acid Test*, or by the fantastical utopias humorously presented in Archigram's projects for an Instant City and a Plug-in City, but debates about their relevance to the functionalist theories of standardisation, industrialisation and capsulisation in the housing industry only provoked laughter and irritation.

Tracing the threads of this complex entanglement, we arrive at two antithetical genealogies that greatly influenced the thinking of URBOT. One is the stream of Californian vernacular architecture exemplified by Charles W Moore and Joseph Esherick, the other is the stream of

utopias in the work of Archigram and Superstudio.

In the dry climate of the West Coast evoked by *Easy Rider* and *Vanishing Point*, a stream of vernacular architecture – developed from the combination of redwood siding and monopitch roofs in the traditional shingle style – made its entrance in the form of a group of weekend houses called Sea Ranch, in which guileless, fresh spaces were created by the addition of the pop sensibility of supergraphics.

With architecture now reduced to manufacturing mechanisms and technologies, our sense of alienation intensifying as reality rapidly slips away, Sea Ranch's crystallisation of miniature structures made from familiar materials and techniques, such as wooden wall siding and supergraphics, was very attractive to URBOT.

On the other hand, those cool worlds delineated by Archigram and Superstudio – toying with utopianism and technology, displaying an utter lack of interest in connecting with theories of industrialisation in line with functionalism – still retained their appeal.

The two major streams from which URBOT gained life – California vernacularism and technological utopianism – share a desire to criticise the dominance of technological civilisation. But apart from this, their intentions and methods are oriented in completely opposite directions. Whereas the former pursues connections with region and climate, and tries to re-establish contact with an untouched nature, the latter comprises science fiction-style depictions of the paradoxical utopias that emerge from an exacerbation of the information and materials with which modern society is saturated.

It is not especially surprising that the attempt to abruptly superimpose these two conflicting motives resulted in the birth of URBOT, a malformed child with recessive heredity. Even in a world brimming with contradictions, such as returning to nature while worshipping technology, perhaps such a thing is possible in a city as anarchic as Tokyo. In any case, with the loss of his most important control function, URBOT became a useless

member of society. Yet he wondered if the fact of his uselessness might allow him to occupy a unique position in society. In contemporary society, puzzlement at his baffling uselessness – a dysfunction explained as arising from his recessive heredity – might lead the busy people that inhabit, or visit, URBOT to ponder, become annoyed, then destroy and restructure him as something functional. This value arising from uselessness is filled with contradictions, but on account of its very illogicality, he thought that he had a meaningful existence within a rationally constructed society.

Inevitably, giving meaning to the existence of URBOT based upon this logic of uselessness gave rise to some particular contradictions.

Firstly, while URBOT advocates the negation of real conditions without leading to a simplistic focus on utopia, he wants his presence to manifest as a tangible shape in the real world. As I have already mentioned, he cannot avoid thinking about the realisation of utopia, even if it might suddenly lose its radiance, but rather than parting with reality by racing toward utopian idealism and coolly laughing at the transparent logic of reality, he thinks that architecture's essential nature lies precisely in savouring the absurdity of real life for an individual human being. Consequently, while URBOT possesses an endless yearning for the opposed directions of past and future inherited from each of his parents, whichever way he leans, he can never avoid looking directly at reality itself.

Secondly, while URBOT senses the unbearable sterility of the metropolitan environment exemplified by Tokyo, the fact is that he could not escape the environment of the city and survive. Taken to the extreme, placing one's body in a location with the greatest sense of contemporary alienation – temporal as well as spatial – allows this sensation of alienation to be directly expressed.

So however frivolous URBOT's selective sensitivity to his era may seem, the feelings that typify an era must be adhered to, and materials must also be chosen based upon these feelings.

In URBOT's interactions with reality, his appearance has been gradually distorted. Essentially, evolution is a perpetual process of adaptation achieved through discarding parts that are useless with regard to the environment and honing only those parts that are effective. However, in the case of URBOT, the meaning of his social existence has been sustained by his uselessness, so his adaptations to the environment are nothing other than the intensification of his useless parts. Perhaps this could be compared to the principle of exaptation in evolutionary theory. Exaptation is the consequence of an excessively direct adaptation to the environment, manifest in phenomena that exceed the level of function and emphasise their symbolic meanings, like the antlers of a deer.

The sense of tension in the evolution of useless spaces arises from an extreme imbalance with the environment due to an increasing friction with reality, and when this tension reaches its peak, URBOT will probably try to reduce it by readapting to the environment through mutation. However, the scale of this avalanche-like phenomenon of mutation is the same as that of the tension arising with regard to the environment, further increasing the vehemence of this vortex of structural transformation. Consequently, the tension generated within URBOT himself is now swelling. I have recurring dreams of a sudden avalanche…

URBOT-001
ALUMINIUM HOUSE

In May 1971, URBOT-001 took root in the concrete rubble on the outskirts of Tokyo.

The fate of URBOT is to be constantly gazing at reality, to be sitting face-to-face with reality, but when he and other people awaken from their dream world they will experience unbearable feelings of being attacked. The accumulated tension toward reality in the process from design through to construction will cause the inhabitants

to confront new situations as they experience these spaces with their own bodies. That is to say, the collisions between the spaces of URBOT and the people inhabiting them will add a new level of tension. At first, people will inquisitively enter the spaces of this malformed child with recessive heredity and look askance at the experience of living in unconventional spaces – at the disparity between the exterior walls of reflective aluminium and the somewhat gloomy plywood-lined interiors, the ground floor and the first floor connected through triangular voids containing a cruciform beam surrounded by angle braces, two cylindrical lights further above, a striped carpet in the primary colours red and blue. People encountering this incoherent space will begin to feel confused, indescribably uncomfortable, assailed by annoying sensations, then will finally decide to confront it, in an attempt to make this useless space effective, to transform it into an efficacious and functional space. The resulting deep traces are added to this useless space. But the depth of these traces is undoubtedly the motor for the next stage in the evolution of URBOT.

As I have already mentioned, the spaces of URBOT constantly nurture contradictory conditions in order to exist in the desert-like urban reality. For example, the materiality of the aluminium exterior walls is based upon the contradiction of using a material strongly associated with industrial manufacturing as an element in the production of vernacular architectural spaces. I had wanted to somehow incorporate here the beautiful timber siding that arose in the stream of California vernacularism, but wondered how to integrate it with the steel frames and concrete rubble of the expansive desert of Tokyo. An eccentric feeling of continuity was achieved by cladding the exterior walls with aluminium, or coloured steel sheet.

Even in the space below the two cylinders of light, where the energy conduits have been gathered, the design was begun with the intention of giving expression to information and energy terminals. However, during the design process, URBOT remembered those phrases that

might also be called the last words of his parents. If just a single step is taken toward the realisation of a cool world, in which machines are treated as toys, then its radiance will be instantaneously lost. The information terminals were jettisoned right at this moment of hesitation, leaving two useless spaces, like deer antlers. Spaces that are mere empty husks, futilely suffused with light.

URBOT-002
USELESS CAPSULE HOUSE

This is a private home. Enclosed by 10m-long, windowless concrete walls, a single door leads to the interior and a cylindrical shaft of light shines in from a large skylight, directly below which is placed a circular kitchen unit like the *irori* (hearth) found in the middle of an old Japanese *minka* (vernacular house). Beyond this is a row of bed capsules for the family members, as well as a toilet and a bath unit, which comprise the entirety of the facilities in the house.

Though the toilet and the bath unit are no more than 1m square, their ceilings are exceptionally high, and natural light enters from a height of 7m. This also applies to the bed capsules. These unusual spaces, extremely distorted in the vertical direction, have resulted from the evolution of the useless spaces in URBOT-001.

If the family has another child, a bedroom will be given to the newborn baby, though this space should be called a bed capsule rather than a bedroom since it is only large enough to hold one bed. Positioned precisely above the pillow is a tube extending to a height of about 5m, acting as a window. The tube penetrates the roof of the dwelling, and light enters through a skylight inserted in its tip. Depending on the family's financial situation at the time they are made, one bed unit may be marble, another bronze, another pressed steel to which a metallic gold coating has been applied. Opening the car bonnet-like door will alter the location of a small white ball suspended above

the pillow on the bed inside. A registration number is etched into the long tube of each capsule, and so even without nameplates a person's location may be ascertained from outside. Furthermore, a capsule will be used throughout its owner's lifetime, and re-registration is necessary in cases of loss or theft. Upon the owner's death, oil is poured into the capsule, the dome of the skylight is detached, and the capsule becomes an incinerator for their cremation. It will then be buried with only the tube projecting above the ground. In other words, the national registration number becomes a *homyo* (posthumous Buddhist name) and the tube is transformed into a grave-marker. The bed capsules are produced in accordance with this ecosystem. Modern dwellings are unable to move because they become filled with too many objects. Nevertheless, like a spaceship, many types of energy and information terminals are brought inside the minimal spaces of these hypothetical capsules. In a private room that ought to be the last refuge for escaping from all systems of control, it was unbearable for URBOT to be controlled under the pretext of being a mechanical capsule. As a consequence, URBOT expelled everything from its own spaces and attempted to resume a relationship with the spaces of the remaining ruins. People slip into the bed capsules of 002 and sleep while illuminated by the faint moonlight transmitted through the tubes from a great height, then greet the sunlight that enters from the same great height. Though everything seems completely normal, they crawl out of their capsules with a kind of ominous premonition. A very unhappy morning has arrived...

URBOT-003
TOKYO VERNACULARISM

One day, a bed capsule from URBOT-002 stepped over the wall of the dwelling and became an independent unit. This was the genesis of the home-sized capsule URBOT-003. Entirely in conformity with the theory of useless evolution,

003 has a citizen registration number inscribed on a light tube that extends far longer than that of 002. Aside from the toilet and shower unit embedded within the walls, the 3.6m-square home-sized capsule contains only a ring-shaped kitchen unit directly below the skylight.

The capsule has only one small entrance and no windows, with pale light shining down through the tube from a hight of 11m. Aside from married couples, this capsule is intended for use by individuals, and one capsule is given to each child when they enter elementary school.

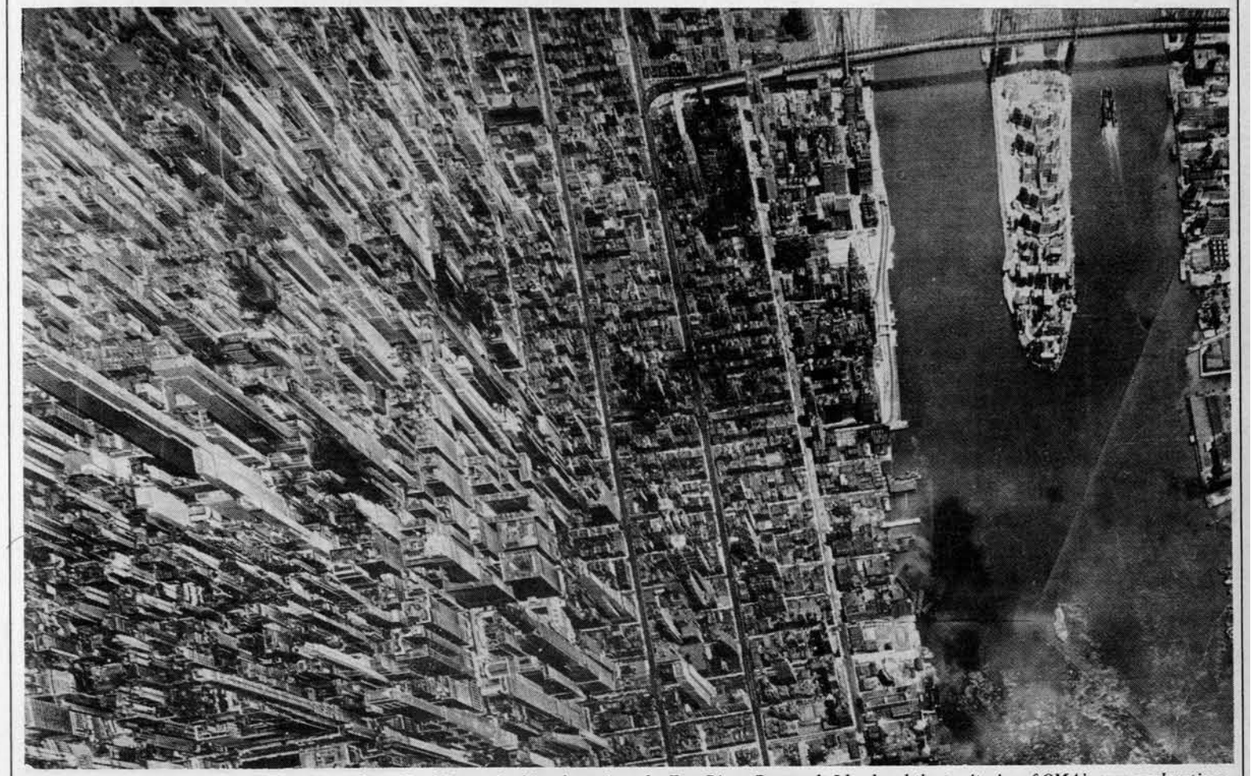
Independent URBOT-003 units are buried in the desert-like vacant lots of Tokyo. As if bubonic plague had struck the city, the scene is of a spreading contagion weaving through the crevices between skyscrapers, covering the roads, covering the plazas, covering the rooftops, covering the surfaces of the expressways. I want you to imagine the appearance of innumerable home-sized capsules with metallic gold cladding emitting a lingering, dull light at sunset in smog-covered Tokyo. Hypothetically, let's position one capsule on each point of a 10m-square grid. If 10 million of these gleaming gold capsules were so positioned, they would fill a square plot of land more than 30km on each side.

In the surroundings of this URBOT-003 array, there are no solid community spaces similar to existing plazas. Rather, the existing plazas and parks have been eroded. Many architects take the word community as the basic unit of urban composition. For local residents this evokes a sweet, beautiful plaza in which they may gather to chat surrounded by water fountains, but for URBOT a modern community is the lowest common denominator arising from selfish human desires: bloody, filthy, hidden in darkness, nothing more than a space as a balancing point fraught with a certain tension. This is absolutely not a beautiful, sweet or calm space, and it is even less likely to be a safe, harmless space. From the outset there was no intention to provide such community spaces. Instead, the spaces around the 003 units will be swallowed and erased within a place and time composed from the

equilibrium of shared illusions. They will connect the gaps between the capsules like ripples in the sand – appearing then vanishing, then appearing and vanishing again.

Like the dark clouds of Lem's *The Invincible,* the world of URBOT is precisely this image of an unbroken continuity of gleaming gold 003 units engulfing all the skyscrapers in the desert that is Tokyo.

REM KOOLHAAS
'Life in the Metropolis' or 'The Culture of Congestion'



1 Manhattan – the archetype of the Metropolitan Condition – looking down into the East River, Roosevelt Island and the territories of OMA's own explorations.

REM KOOLHAAS uses Manhattan as a model to outline fundamental attributes of high-density, high-rise, urbanity. He shows Coney Island as the test-bed for Manhattanism – a surreal environment to which New Yorkers escaped from the congestion of their city to experiment with alternative life-styles within the same context of congestion. Entrepreneurs rapidly implemented these experiments: skyscrapers became multi-layered shells with each layer providing the opportunity for living out independent – even opposed – life-styles. This promise of metropolitanism – a totally fabricated world within which any number of opposing views could co-exist – needlessly failed, he observes, due to a profound lack of nerve. The work of OMA attempts a recovery of that nerve.

'Why do we have a mind, if not to get our own way?'
Dostoevsky

Somewhere in the 19th century certain parts of the globe – negligible in terms of surface – developed an unprecedented condition: through the simultaneous explosion of modern technologies and human population on their limited territories, they found themselves supporting the mutant form of human coexistence that is known as Metropolis.

The Metropolis invalidates all the previous systems of articulation and differentiation that have traditionally guided the design of cities. The Metropolis annuls the previous history of architecture.

But if the Metropolis is a true mutation, it can be assumed that it has also generated its own Urbanism: an architecture that is exclusively concerned with the 'splendeurs et misères' of the Metropolitan Condition; an architecture with its own theorems, laws, methods, breakthroughs and achievements that has remained largely outside the field of vision of official architecture and criticism, both unable to admit a fundamental rupture that would make their own existence precarious.

Manhattan

By an unspoken consensus, Manhattan, **(1)**, is considered the archetype of the Metropolitan Condition, to the point where the two are often interchangeable. Manhattan's spectacular growth coincided exactly with the definition of the

oncept of Metropolis itself. Manhattan represents ne apotheosis of the ideal of density per se, both f population and of infrastructures; its architecure promotes a state of congestion on all possible evels, and exploits this congestion to inspire and upport particular forms of social intercourse that ogether form an unique *culture of congestion.*

The following episodes of Manhattan's history ircumscribe such an Urbanism that is specifically letropolitan.

oney Island

oney Island is a clitoral appendage at the mouth f New York harbour, **(2)**, discovered one day efore Manhattan itself.

From 1600 to 1800 the shape of the peninsula hanged under the combined impact of natural orces – (shifting sands) – and human intervention (the cutting of a canal that turned Coney ctually into an island). These modifications ogether followed a 'design' that turned the Island nore and more into a miniature of Manhattan.

From the mid-19th century, the obstacles of eography that had so far ensured relative inaccessbility to the island, were one by one transcended y new transportation technologies.

In 1883 the Brooklyn Bridge removed the last bstruction that had kept Manhattan's inhabitants n place. From then on they escaped to the tlantic beach in a weekly Exodus that concenrated more than 1 million people on the minisule island on a good day.

The virgin nature that is the destination of this antic migration, disappeared under the onslaught f the unprecedented hyper-density. As compensaion for this loss of nature, a battery of new techologies was developed to provide equivalent ensations on a scale that was commensurate with he new Metropolitan numbers.

Coney Island became a laboratory of the ollective unconscious: the themes and tactics f its experimentation were later to reappear in Manhattan.

Cow

The first natural element to be converted was the cow, **(3)**. Since no amount of real cows could deal with the insatiable thirst of the million, a machine was designed and built: the Inexhaustible Cow. Its milk is superior to the natural product in terms of quantity, regularity of flow, hygiene, and controllable temperature.

Bathing

Similar conversions follow in rapid succession. Since the total surface of the beaches and the total length of the surfline were finite and given, it followed with mathematical certainty that not each of the hundreds of thousands of visitors could find a place to spread out in the sand, let alone succeed in reaching the water within the limit of a single day.

Toward 1890, the introduction of electricity, **(4)**, in this impasse made it possible to create a second daytime – intense electric lights were placed at regular intervals along the surfline, so that the sea could be enjoyed in a truly Metropolitan shift system. Those unable to reach the water in the day, were given a 12-hour extension. What is unique in Coney Island – and this syndrome of the Irresistible Synthetic sets the tone for later events in Manhattan – is that this illumination was not seen as a second-rate experience, but that its very artificiality was advertised as an attraction in itself: Electric Bathing.

Horses

The preferred activity of the happy few who had enjoyed the island in its virgin state, had been horseback riding. Of course, that experience was unthinkable on the scale of the new masses. Real horses in adequate numbers would require a separate infrastructure as big as the island itself.

Also, the ability to ride a horse was a form of 'knowledge' not available to the proletariat that had made the island its playground.

In the mid-90s George Tilyou laid out a mechanical track, **(5)**, that leads through Coney's natural landscapes, along the oceanfront and across a number of man-made obstacles. He named it 'Steeplechase' . . . 'an automatic racetrack with gravitation as its motive power . . . Its horses resemble in size and model the trackracer. Staunchly built, they are to a certain extent under the control of the rider, who can acclerate the speed by the manner in which he utilises his weight and his position on the ascending and descending grades . . . '

Steeplechase combined in a single attraction the provision of entertainment with a form of emancipation through machinery – the elite experience of horseback riding democratised through technology.

Love

Two years later, even the most intimate processes of human nature were converted.

It is often alleged that the Metropolis creates loneliness and alienation. Coney Island responded to this problem with the 'Barrels of Love', **(6)**.

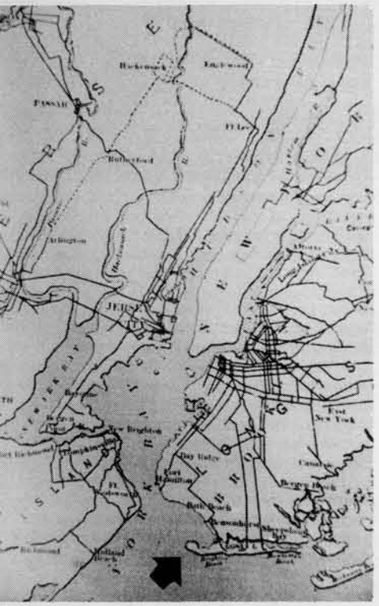
Two horizontal cylinders – mounted in line – revolve in opposite directions. At either end a narrow staircase leads up to the entrance; one feeds men into the apparatus, the other women. It is impossible to remain standing in the machine, men and women are thrown on top of each other. The unrelenting rotation then creates synthetic intimacy between couples who would never have met without its assistance.

If necessary, this intimacy could be further processed in the 'Tunnels of Love', an artificial mountain next to the couple-forming machine. The freshly formed pairs would board a small boat that disappears inside a system of dark tunnels where complete obscurity ensues – or at least – visual privacy.

The rocking movement of the boats on the shallow water was supposed to increase sensuality.

Conclusion: 1

With the sequence of: Cow, Electric Bathing,



2 Coney Island around 1910: Connected to the Metropolis by more and more transportation networks that deposited – on certain days in the summer – more than 1 million people on the beach . . .
3 The inexhaustible Cow, 1890: Only a machine could satisfy the thirst of the masses.
4 Electric Bathing: A row of intense electric torches placed at regular intervals along the surfline to create a second, synthetic, daytime – doubling the capacity of the beach so that the sea could be enjoyed on a shift-system. Soon the night-shift becomes more attractive than the day-shift.
5 Steeplechase by moonlight: A herd of mechanical horses runs on a track that is laid out through what remains of nature. It always was full moon on Coney Island.
6 The Barrels of Love, exterior: Sub-conscious anti-alienation apparatus emerged before 1900, to deal with some of the same issues Freud was bringing to the surface in Vienna.

Steeplechase and Barrels of Love, all the natural elements that had once defined the attraction of the Island, were systematically replaced by a new kind of machinery that converted the original nature into an intricate simulacrum of nature, a compensatory technical service.

This technology is not the agent of objective and quantifiable improvements – such as raising the levels of illumination, controlling temperature, etc. – it is a superior substitute for the 'natural' reality that is being depleted by the sheer density of human consumers.

Together, this apparatus constitutes an alternative reality that is invented and designed, instead of accidental and arbitrary.

Since this 'instrumentarium' of true modernity creates states and situations that have never existed before, it can never escape its aspect of fabrication – of being the result of human fantasy.

The Metropolis is irrevocably the resultant of such identifiable mental constructions, and that is the source of its fundamental 'otherness' from all previous Urbanisms.

Elevator

In 1853, at Manhattan's first World's Fair, the invention that would, more than any other, become the 'sign' of the Metropolitan Condition, was introduced to the public in a singularly theatrical format.

Elia Otis, the inventor of the elevator, **(7)**, mounts a platform. The platform ascends. When it has reached its highest level, an assistant presents Otis with a dagger on a velvet cushion. The inventor takes the knife and attacks what appears the crucial component of his invention: the cable that has hoisted the platform upward and that now prevents its fall. Otis cuts the cable; nothing happens to platform or inventor.

Invisible safety-catches prevent the platform from rejoining the surface of the earth. They represent the essence of Otis' invention: the ability to prevent the elevator from crashing.

Like the elevator, each technical invention is pregnant with a double image: the spectre of its possible failure. The way to avert that phantom disaster is as important as the original invention itself.

Otis introduced a theme which would become a *leitmotiv* in the performance of the Metropolis: a spectacle that features a neck and neck race between an astronomical increase in the potential for disaster that is only just exceeded by a still more astronomical increase in the potential to avert disaster.

Elevator 2

From the 1870s, the elevator became the great emancipator of all the floors above the ground floor. Otis' apparatus recovered the innumerable planes that had so far been purely speculative, and revealed their superiority in the first Metropolitan paradox: the greater the distance from the earth – the more unnatural the location – the closer the communication with what remains of nature (ie. light, air, views, etc.).

The elevator is the ultimate self-fulfilling prophesy: the further it travels upward, the more undesirable the circumstances it leaves behind.

Through the mutual reinforcement of the elevator and the steelframe (the latter with its uncanny ability to support the newly identified territories without itself taking any space), any given site in the Metropolis could now be multiplied ad infinitum, a proliferation of floorspace that was called Skyscraper, prime instrument of the architecture of density.

Theorem

In 1909 the 'layering' of the world's surface through the action of the elevator, was posited in the form of a visual theorem that appeared in the popular press, **(8)**.

A slender steel structure supports 84 horizontal planes, all the size of the original plot. Each of these artificial levels is treated as a *virgin site* to establish a private domain around a single country-house and its attendant facilities such as stables, servants' cottages, gazebos, etc, all implanted in an airborne meadow.

Emphatic permutations of the styles of the villas suggested that each of the elevator stops corresponded to a different life-style – an implied ideological variation – all of them supported with complete neutrality by the steelframe rack.

Life inside this building is fractured to the extent that it could not conceivably be part of a single scenario: on the 82nd floor a donkey shrinks back from the void, on the 81st a cosmopolitan couple hail a plane.

The privacy and isolation of each of the aerial plots seemingly conflicts with the fact that, together, they form a single building. In fact, the diagram implies that the structure is successful exactly to the extent that the individuality of each plot is respected. The structure 'frames' their coexistence without interfering with their contents.

The Building is an accumulation of privacies.

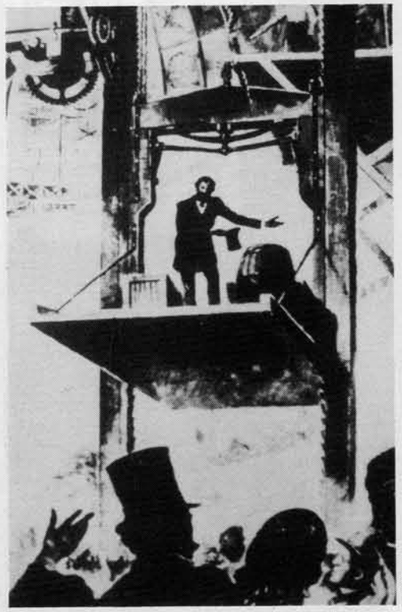
Only 5 of the 84 floors are visible on the drawing. Hidden in the clouds other activities occupy other plots; the use of each platform can never be known in advance of its construction. Villas go up and collapse, other facilities replace them, but that does not affect the framework.

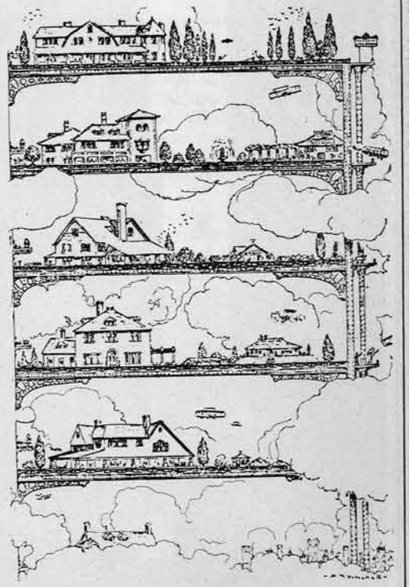
100 Storey Building

In 1911 a project for a '100 Storey Building' was

7 Otis presents the elevator on the 1853 World's Fair in New York. Cable snaps, nothing happens: the non-event as apotheosis. The Metropolis as an accumulation of averted disasters.

8 'Meadows Aloft', 1909: 84 superimposed platforms hover above the 'old' city of skyscrapers. Each platform is treated as a virgin site, with its own destiny. The architect has lost (or surrendered) control over the contents of the building.





nveiled that incorporated many of the break-hroughs which, only two years earlier, seemed ntirely theoretical. The Building was a straight-orward extrusion of the block it occupies multi-plied by 100.

The lower third of the Building is devoted to ndustry, the middle part to business, the upper art to living. On every 20th storey is a public laza that occupies a whole floor and articulates he demarcation between the different functional ectors: a 'general market' on the 20th, a cluster of heatres on the 40th, a 'shopping district' on the 0th, a hotel on the 80th, and an 'amusement ark, roof garden and swimming pool' on the roof.

At first sight, the rooms inside this structure re conventional, equipped with fireplaces and voodpanelling. But they are also equipped with 7 utlets for 'temperature and atmosphere regulating ubes' which demonstrate once more, the anti-ragmatic, in fact, poetic usage of the Metropolitan nfrastructure: 'A = salt air, B = fresh air, C = dry salt air, D = dry fresh air, E = medicated air (to suit disease), F = temperature switch, GHI = perfumes'.

The outlets of this techno-psychic battery are the keys to a scale of synthetic experiences that ranges from the hedonistic to the hyper-medical. Some rooms can be 'set' on Florida, others on the Canadian Rocky Mountains. The perfumes and the medicinal air suggest even more abstract destinations. In the 100 storey Building each cubicle is equipped to pursue its private existential journey.

The building has become a laboratory for emotional and intellectual adventure; the fact that it is implanted in Manhattan has become – almost – immaterial.

Downtown Athletic Club

Within 20 years, the promise of the 100 storey Building – that of a skyscraper fully conquered by higher forms of social intercourse than mere business – was realised in 1931 with the Downtown Athletic Club.

All the latent potential of the skyscraper as a type is exploited in a masterpiece of the Culture of Congestion, a Constructivist Social Condenser materialised in Manhattan.

It is one of the rare 20th century buildings that is truly revolutionary: it offers a full inventory of the fundamental modifications – technical and psychological – that are caused by life in the Metropolis, and that separate this century from all previous ones. Its existence allows a spectrum of experiences on a single place that was previously unthinkable.

The Club – externally indistinguishable from the other skyscrapers in the Wall Street area – is located on the Hudson near Battery Park on a lot 23 m wide and 54 m deep.

The Club is the 1909 theorem made concrete: a sequence of superimposed platforms that each repeat the original rectangle of the site, connected by a battery of 13 elevators concentrated along the north wall of the structure.

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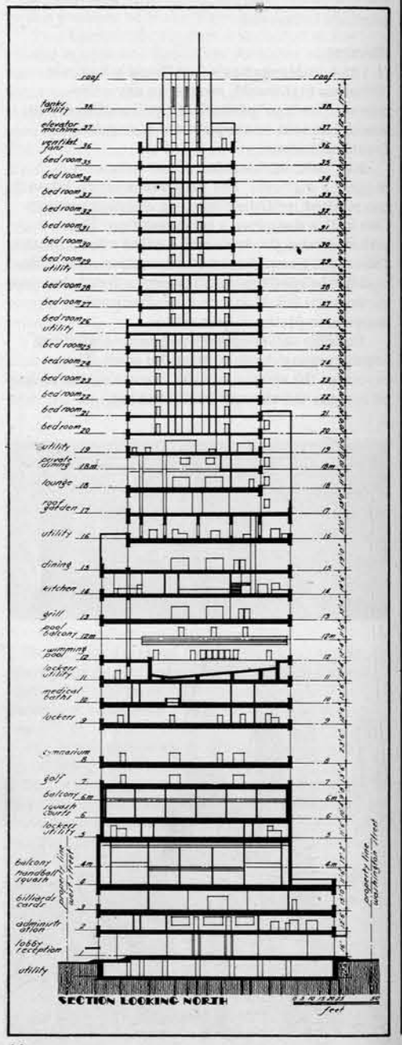

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'The plan is of primary importance, because on the floor are performed all the activities of the human occupants . . .', that is how Raymond Hood (the most theoretical of Manhattan's architects) defined Manhattan's interpretation of functionalism: each plan as a collage of functions that describes on the synthetic platforms an episode of Metropolitan ritual. Each of the rectangles of the Downtown Athletic Club is such a scenario with a highly suggestive – if abstract – plot.

Each floor is a separate instalment of a complex intrigue – their sequence as random as only the elevator man can make them – this form of architecture is a form of Modernistic writing: the planning of choreography of mankind through experimental techno-psychic apparatus designed by themselves to celebrate their own redesign.

The lower 15 floors of the building, **(10)**, are accessible only to men. Their sequence from the ground to the top corresponds to an increasing refinement and artifice. From the 17th to the 18½th floor, the men, perfected in the lower floors, are allowed to communicate with the opposite sex in the dining room, the roof terrace and the dance floor. The final 20 floors are devoted to Hotel accommodation.

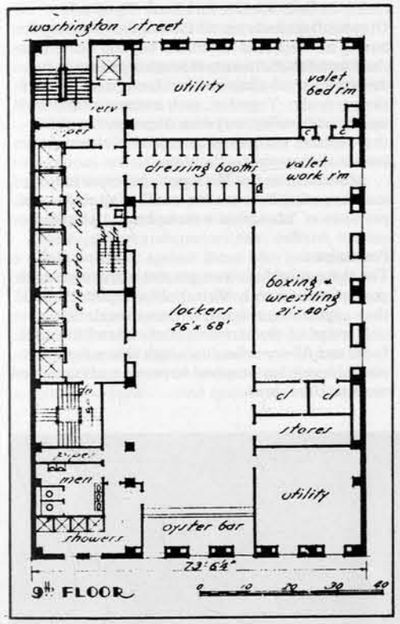
Floors 7, 9, 11 and 12 deserve special analysis for their extreme daring: Emerging from the elevator on the 9th floor, **(11)**, the visitor – probably a Wall Street stockbroker – finds himself in a vestibule that leads directly to a locker-room at the centre of the floor (where there is no daylight). There he undresses, puts on gloves and enters an adjoining space that is equipped for boxing and wrestling. But on the southern side, the locker-room is also served by a small oysterbar.

Eating oysters with boxing gloves, naked, on the 9th floor – such is the plot of this floor – the 20th century in action.

The 10th floor, **(12)**, is devoted to preventive medicine. On one side of a large dressing room and lounge an array of body manipulations – sections for massage and rubbing, an 8-bed station for artificial sunbathing (open to the river), a 10-bed rest area – is arranged around a Turkish bath. The south-east corner of the floor is a medical facility capable of treating five patients at once. A doctor is charged with the process of 'colonic irrigation' – the literal invasion of the human body with cultivated bacteria that modify and accelerate the natural metabolism of the human body.

This final step completes the sequence of radical intervention and voluntary self-experimentation initiated by such apparently innocent attractions as Coney Island's 'Barrels of Love'.

On the 12th floor, a swimming pool, **(13)**, occupies almost the full rectangle. At night, it is illuminated by an underwater lighting system, so that the entire slab of water with its frenetic swimmers, appears to float in space, between the electric scintillation of the Wall Street skyline.



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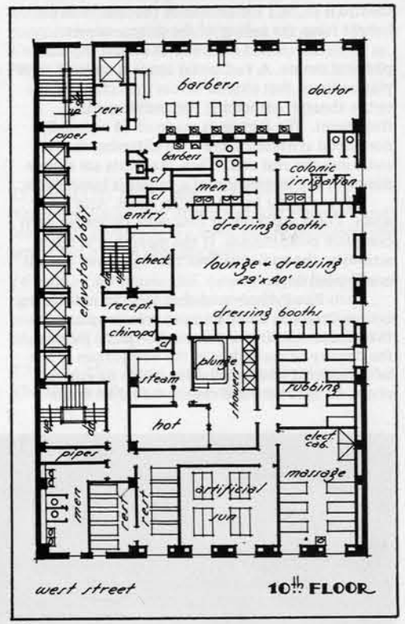

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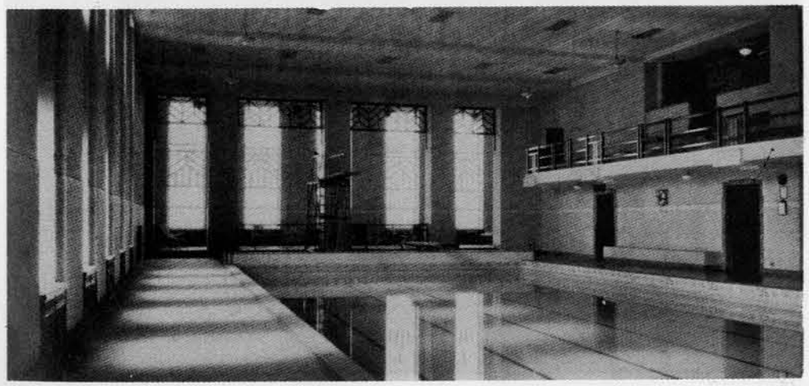

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Downtown Athletic Club, 1931, Starrett & Van Vleck, exterior; View from the Hudson river. To hide the irregular ceiling heights of the various athletic facilities, the vertical thrust of the lower part is accentuated. The blind parts contain squash and handball courts and of course, locker rooms. A set back at the 16th floor creates a roof garden. The conventional fenestration of the upper part indicates hotel accommodation.

10 Downtown Athletic Club, section: The full potential of the skyscraper as social condenser was realised within 20 years – the skyscraper conquered, floor by floor, by higher forms of social intercourse.

11 Downtown Athletic Club, 9th floor, plan: Eating Oysters with Boxing Gloves, naked, on the 9th floor – *the 20th century in action.*

12 Downtown Athletic Club, 10th floor, plan: A medical dimension is added to the programme of physical self-improvement: a station for colonic irrigation located at the top right corner.

13 Downtown Athletic Club, 12th floor, the pool . . . with its frenetic swimmers, an airborne slab of water . . .

14 Downtown Athletic Club, 7th floor, the golf-course: Nature, obliterated by the Metropolis, now resurrected as merely one of its many 'layers'.

Of all the floors, the Interior Golfcourse, **(14)** is perhaps the most significant enterprise: an interior English garden landscape of small hills and valleys, a little river that curls across the rectangle, green grass (real), a bridge . . . A mural extends the landscape toward a nebulous horizon, but the regular punctuation of the lighting fixtures on the ceiling reminds, irrevocably, of fabrication.

The presence of the Golfcourse argues that nature, obliterated by all the Metropolitan structures, will now be resurrected as merely one of the layers of the Metropolis. After its total eclipse, nature returns as one of the services of the Culture of Congestion.

Conclusion: 2

Through the medium of the Skyscraper, each site in the Metropolis accommodates – in theory at least – an unstable and unforseeable combination of superimposed and simultaneous activities whose configuration is fundamentally beyond the control of architect or planner.

As a vehicle of Urbanism, the indeterminacy of the Skyscraper suggests that – in the Metropolis – no single specific *function* can be matched with a single *place*.

Through this destabilisation it is possible to absorb the 'change that is life' by continuously rearranging functions on the individual platforms in an incessant process of adaptation that does not affect the framework of the building itself.

Exteriors and interiors of such structures belong to two different kinds of architectures. The first – external – is only concerned with the appearance of the building as a more or less serene sculptural object, while the interior is in a constant state of flux – of themes, programs, iconographies – with which the volatile metropolitan citizens, with their overstimulated nervous systems, combat the perpetual threat of ennui.

Radio City Music Hall

The application of technology at the service of metaphor, occurs at a still more explicit level and on a larger scale than the Athletic Club in Radio City Music Hall, a theatre for 6200, **(15).**

It is a prototype of a strictly interior architecture inserted in the neutral envelope of Rockefeller Centre. Its cosmogony was not invented by its official architects, but by their client, the impressario Samuel Rothafel, known as Roxy.

In the early 30s a group of architects – among them Wallace Harrison – took Roxy on an European tour – all the way to Moscow – in an attempt to convert him to Modern Architecture.

But Roxy remained indifferent to the antiseptic accommodations which modern architects had designed for the fundamentally irrational culture of the theatre. On his return to New York, he had a revelation when he watched a mid-Atlantic sunset. 'I didn't conceive of the idea. I dreamed it, **(16).** I believe in creative dreams. The picture of Radio City Music Hall was complete and practically perfect in my mind before architects and artists put pen on drawing paper . . . ' His theatre is to be a simulation of the spectacle he beheld from the railing of the ship: a sunset.

Roxy's architect dutifully executed the metaphorical theme. A vast ovoid space is covered with plaster 'rays' that extend across the ceiling of the entire theatre, embracing the audience like a firmament. The curtain is made of an especially developed synthetic fibre – so glittering that it outshines the real sun. When the lights are slowly dimmed, the impression of a sunset is inescapable.

But the lights have to go on again. And off again. There are three or four such cycles for each complete performance. If the metaphor is taken seriously, the audience lives through three or four accelerated days.

Then Roxy discovered that the airconditioning system could be used for more creative purposes than simple cooling and heating – ie. to increase the density of metaphor in the auditorium. First he considered adding laughing gas to its atmosphere, so that his 6200 clients would be transported to 'another world' where they would be more receptive to the impact of the movies. However, he desisted after urgent pleading by his lawyers, but only after substituting health-giving Ozone for the N_2O. Now his theatre combines 'Supertime' with 'Superhealth', a union that is caught perfectly in his advertisement 'A visit to Radio City Music Hall is as good as a month in the country . . . '

Conclusion: 3

As in the example of Radio City Music Hall, planning in Manhattan consists of the imposition on the explosive substance of the Metropolis of metaphoric models – at once primitive and efficient – that replace literal organisation – impossible in any case – with a form of conceptual control.

Such hermetic, selfcontained enclaves offer emotional shelter to the disinherited Metropolitan masses, ideal worlds removed in time and space, protected against the corrosion of everyday reality in their interior locations. These sub-Utopian fragments are all the more convincing for having no territorial ambitions beyond occupying their interior allotments through a private hyperdensity of symbolism and localised paroxysms of the particular. Together, such moments form a matrix of frivolity, a system of poetic formulas that replaces traditional quantifiable planning in favour of metaphoric planning.

Movement in the Metropolis becomes ideological navigation between the conflicting claims and promises of 'islands' of a metaphoric archipelago.

Postscript

The three episodes above present a provisional triangulation of a truly Metropolitan architecture. If they appear extravagant, or even unreal, that is only a sign of the narrowness of our architectural focus and of our refusal to admit that a fundamental break has occurred between traditional and modern Urbanisms.

15

16

These 'stories' describe a tradition of modernity that insists on systematically exploiting all available apparatus and all the fresh infrastructures of the age to establish fantasies as realities in the world. The cumulative effect of such scattered episodes – and no doubt the cause of the anxieties they inspire – is that they discredit the idea of Reality as an immutable and indestructible presence – of reality as an ultimate safety net under our flawed acrobatic performances.

Instead, the 'hysterical' structures of the Metropolis represent a free fall in the space of human imagination, a fall with unpredictable outcome, not even the certainty that it will end on the ground.

The true ambition of the Metropolis is to create a world totally fabricated by man, ie. to live *inside* fantasy. The responsibilities of a specifically Metropolitan architecture have increased correspondingly: to design those hermetic enclaves – bloated private realms – that comprise the Metropolis. Such an architecture not only creates the 'sets' of everyday life, but it also defines its contents with all possible means and disciplines such as literature, psychology, etc. Through the magical arrangement of human activities on all possible levels, it writes a scenario for the scriptless Metropolitan extras.

If that appears a form of megalomania, such a megalomania is tempered by the fact that its expressions are always localised, since they address, by definition, only a part of the total audience, never the whole. Metropolitan architecture is megalomaniac on a modest scale.

Metropolitan architecture thus defined, implies a 2-fold polemic: against those who believe that they can undo the damage of the Modern Age – ie. the Metropolis itself – through the artificial respiration and resuscitation of 'traditional' architecture of streets, plazas, boulevards, etc.; empty spaces for dignified and decent forms of social intercourse, to be enforced in the name of a stoic good taste . . . and against that Modern architecture which – with its implacable aversion to metaphor – has tried to exorcise its fear of chaos through a fetish for the objective and to regain control over the volatility of the Metropolis by dispersing its bulk, isolating its components, and quantifying its functions, and render it predictable once more . . . Both squander the potential of the Culture of Congestion.

The Urbanism of the 3 episodes was subconscious and spontaneous, not the result of an explicit doctrine. It was followed by an interval in which the architecture of the Metropolis has regressed, or at least fallen under the domination of official architecture.

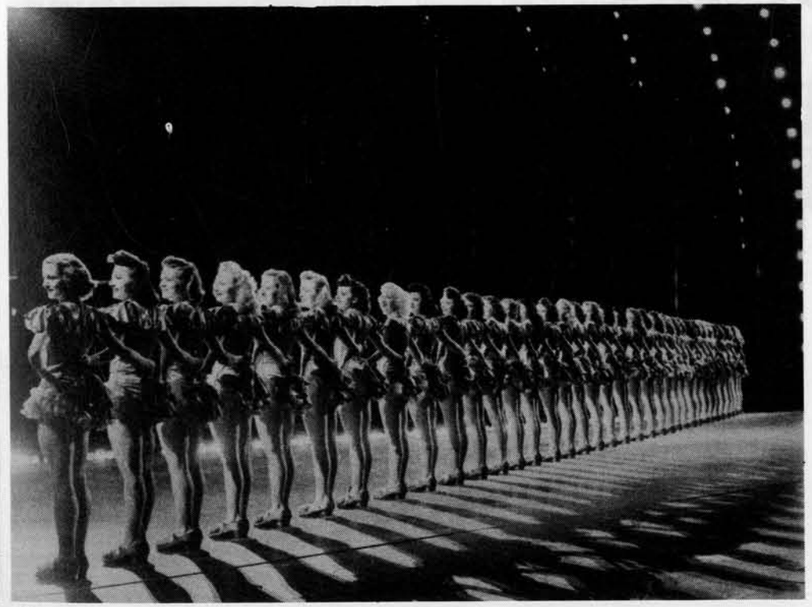
The New York projects of the Office for Metropolitan Architecture attempt to negotiate the transition from that early, deliberately subconscious, state of architectural production to a conscious stage.

This article is based on research for 'Delirious New York – a Retroactive Manifesto for Manhattan', a book/theory on the culture of congestion, to appear in 1978 with Oxford University Press in New York and Ed. du Chêne in Paris.

15 Radio City Music Hall, 1933, exterior: 'The picture of Radio City Music Hall was complete and practically perfect in my mind before architects and artists put pen on drawing paper.'

16 Radio City Music Hall, interior: A theatre like a sunset, with ozone emanating from the air-conditioning system . . . 'A visit to Radio City Music Hall is as good as a month in the country.'

17 Radio City Music Hall, the Rockettes on stage: The true inhabitants of the Metropolis.



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La Vie dans la Métropole

REM KOOLHAAS prend Manhattan pour modèle lui permettant de définir les principes fondamentaux de l'urbanisme à gratte-ciels et haute densité de population. Il présente Coney Island comme banc d'essai du Manhattanisme, environnement surréaliste vers lequel les habitants de New-York fuient leur cité congestionnée pour expérimenter d'autres styles de vie dans le même contexte de congestion. Les entrepreneurs ont vite mis ces expériences à profit: les gratte-ciels deviennent des cellules multi-couches dans lesquelles chaque couche favorise un style de vie indépendant des autres, sinon opposé. Cette promesse de métropolitanisme, c'est-à-dire un monde totalement artificiel dans lequel peuvent co-exister les points de vue les plus divers, a échoué, remarque l'auteur, par manque de dynamisme. Les travaux de OMA essaie de lui communiquer cette vitalité.

Das Leben in der Großstadt

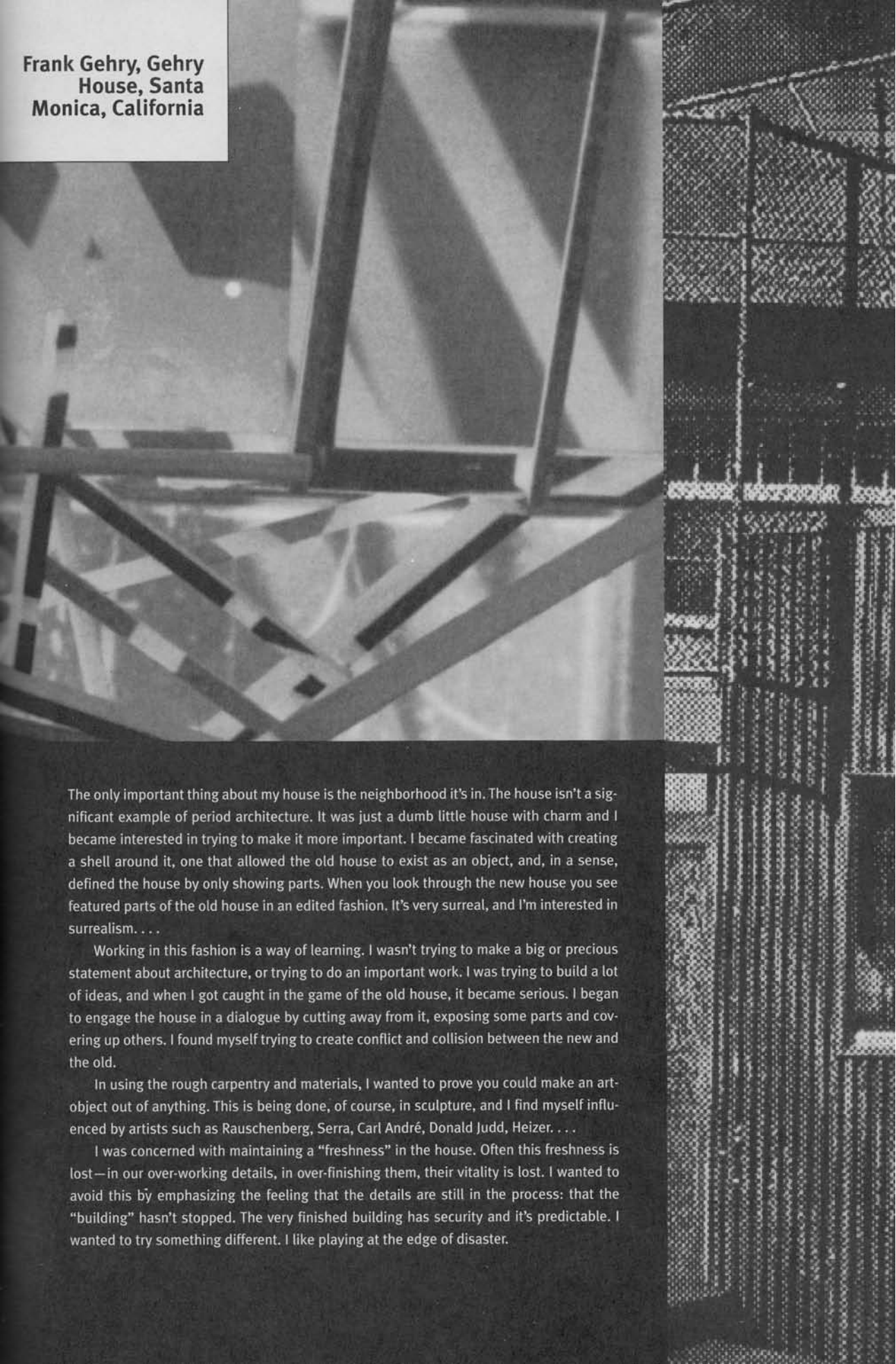
REM KOOLHAAS hat Manhattan als Modell gewählt, um die grundlegenden Attribute einer Großstadt hoher Bevölkerungsdichte, in der Hochhäuser vorherrschen, zu umreißen. Er behandelt Coney Island als den Prüfstein des "Manhattanism" - eine surreale Welt, in die New Yorker aus ihrer übervölkerten Stadt entrinnen, um alternative Lebensstile ebenfalls unter Bedingungen der Übervölkerung zu erproben. Unternehmer setzten diese Versuche bald in konkrete Wirklichkeit um: Wolkenkratzer wurden mehretagige Gehäuse, in denen jede Etage die Möglichkeit zum Ausleben unabhängiger - sogar entgegengesetzter - Lebensstile bot. Dieses Versprechen des Großstadthaften - einer völlig künstlichen Welt, in der jede beliebige Anzahl entgegengesetzter Ansichten nebeneinander existieren könnte - führte, wie der Verfasser feststellt, grundlos zu nichts, da einfach der nötige Mut fehlte. Die OMA ist bemüht, diesen Mut ins Leben zu rufen.

La vita nella metropoli

REM KOOLHAAS si serve di Manhattan come modello per delineare degli attributi basilari di altà densità, verticalismo edilizio, urbanizzazione. Egli addita Coney Island come banco di prova per il Manhattanismo - un ambiente surreale in cui cercarono rifugio i nuovayorchesi, fuggendo dalla congestione della loro città, per sperimentare modi di vita alternativi, sempre nello stesso contesto di congestione. Gli imprenditori attuarono rapidamente questi esperimenti: i grattacieli divennero dei gusci multistrati, con ogni strato atto a provvedere l'opportunità di vivere dei modi e degli stili di vita indipendenti - persino contrapposti. Questa promessa di metropolitanismo - e cioè un mondo interamente inventato entro cui avrebbero potuto coesistere un gran numero di vedute opposte - fallì senza necessità, osserva l'autore, a causa di una profonda assenza di coraggio. Il lavoro dell' OMA si sforza di recuperare tale convincimento e coraggio.

レン クールハースは 高密度 高层 都市性の基本的特徴を描き出すためのモデルとして マンハッタンを扱う。彼は都会系の極点例として コニーアイランドを解説する。ニューヨーク人が 別の生活を求めて 自分達の密集した都会から、同じ文脈の密集の中へと逃れていった超現実的現象がコニーアイランドであるとする。企業家達は、このような動向を把えて すぐさま 現実化した。つまり、超高层建築は 独立しながら しかも 相反するような生活様式を 導いた 機会を 各层が 提供してくれる 多层化した 殻である。すべてが 全く 作りものの 世界であり、そこでは、いかなるメンバーが 反対の 意見を 持とうとも 共存できる世界であるという。この大都会主義の 前途は 神経組織が大きく失調しているために 反古に 終ったと 彼は見る。O.M.Aの 作業は その神経の回復を 意図している。

Frank Gehry, Gehry House, Santa Monica, California



The only important thing about my house is the neighborhood it's in. The house isn't a significant example of period architecture. It was just a dumb little house with charm and I became interested in trying to make it more important. I became fascinated with creating a shell around it, one that allowed the old house to exist as an object, and, in a sense, defined the house by only showing parts. When you look through the new house you see featured parts of the old house in an edited fashion. It's very surreal, and I'm interested in surrealism. . . .

Working in this fashion is a way of learning. I wasn't trying to make a big or precious statement about architecture, or trying to do an important work. I was trying to build a lot of ideas, and when I got caught in the game of the old house, it became serious. I began to engage the house in a dialogue by cutting away from it, exposing some parts and covering up others. I found myself trying to create conflict and collision between the new and the old.

In using the rough carpentry and materials, I wanted to prove you could make an art-object out of anything. This is being done, of course, in sculpture, and I find myself influenced by artists such as Rauschenberg, Serra, Carl André, Donald Judd, Heizer. . . .

I was concerned with maintaining a "freshness" in the house. Often this freshness is lost—in our over-working details, in over-finishing them, their vitality is lost. I wanted to avoid this by emphasizing the feeling that the details are still in the process: that the "building" hasn't stopped. The very finished building has security and it's predictable. I wanted to try something different. I like playing at the edge of disaster.

You can judge how bad the seventies were by looking at its uptight architecture.

A democracy of opinion polls and complacency thrives behind Biedermeier façades. We have no desire to build Biedermeier. Not now or no other time. We are tired of seeing Palladio and other historical masks. Because with architecture, we don't want to exclude everything that is disquieting.

We want architecture that has more. Architecture that bleeds, that exhausts, that whirls, and even breaks.
Architecture that lights up, stings, rips, and tears under stress.
Architecture has to be cavernous, fiery, smooth, hard, angular, brutal, round, delicate, colorful, obscene, lustful, dreamy, attracting, repelling, wet, dry, and throbbing. Alive or dead.

If cold, then cold as a block of ice.
If hot, then hot as a blazing wing.
Architecture must blaze.

Coop Himmelb(l)au 1980

Junkspace

REM KOOLHAAS

Logan Airport: A World-Class Upgrade for the Twenty-first Century
—Late-Twentieth Century Billboard

Rabbit is the new beef . . . Because we abhor the utilitarian, we have condemned ourselves to a lifelong immersion in the arbitrary . . . LAX: welcoming—possibly flesh-eating—orchids at the check-in counter . . . "Identity" is the new junk food for the dispossessed, globalization's fodder for the disenfranchised . . . If space-junk is the human debris that litters the universe, Junk-Space is the residue mankind leaves on the planet. The built (more about that later) product of modernization is not modern architecture but Junkspace. Junkspace is what remains after modernization has run its course, or, more precisely, what coagulates while modernization is in progress, its fallout. Modernization had a rational program: to share the blessings of science, universally. Junkspace is its apotheosis, or meltdown . . . Although its individual parts are the outcome of brilliant inventions, lucidly planned by human intelligence, boosted by infinite computation, their sum spells the end of Enlightenment, its resurrection as farce, a low-grade purgatory . . . Junkspace is the sum total of our current achievement; we have built more than did all previous generations put together, but somehow we do not register on the same scales. We do not leave pyramids. According to a new gospel of ugliness, there is already more Junkspace under construction in the twenty-first century than has survived from the twentieth . . . It was a mistake to invent modern architecture for the twentieth century. Architecture disappeared in the twentieth century; we have been reading a footnote under a microscope hoping it would turn into a novel; our concern for the masses has blinded us to People's Architecture. Junkspace seems an aberration, but it is the essence, the main thing. . . the product of an encounter between escalator and air-conditioning, conceived in an incubator of Sheetrock (all three missing from the history books). Continuity is the essence of Junkspace; it exploits any invention that enables expansion, deploys the infrastructure of seamlessness: escalator, air-conditioning, sprinkler, fire shutter, hot-air curtain . . . It is always interior, so extensive that you rarely perceive limits; it promotes disorientation by any means (mirror, polish, echo) . . . Junkspace is

OCTOBER 100, Spring 2002, pp. 175–190. *© 2002 Rem Koolhaas.*

sealed, held together not by structure but by skin, like a bubble. Gravity has remained constant, resisted by the same arsenal since the beginning of time; but air-conditioning—invisible medium, therefore unnoticed—has truly revolutionized architecture. Air-conditioning has launched the endless building. If architecture separates buildings, air-conditioning unites them. Air-conditioning has dictated mutant regimes of organization and coexistence that leave architecture behind. A single shopping center is now the work of generations of space planners, repairmen, and fixers, like in the Middle Ages; air-conditioning sustains our cathedrals. (All architects may unwittingly be working on the same building, so far separate, but with hidden receptors that will eventually make it cohere.) Because it costs money, is no longer free, conditioned space inevitably becomes conditional space; sooner or later all conditional space turns into Junkspace . . . When we think about space, we have only looked at its containers. As if space itself is invisible, all theory for the production of space is based on an obsessive preoccupation with its opposite: substance and objects, i.e., architecture. Architects could never explain space; Junkspace is our punishment for their mystifications. O.K., let's talk about space then. The beauty of airports, especially after each upgrade. The luster of renovations. The subtlety of the shopping center. Let's explore public space, discover casinos, spend time in theme parks . . . Junkspace is the body double of space, a territory of impaired vision, limited expectation, reduced earnestness. Junkspace is a Bermuda Triangle of concepts, an abandoned petri dish: it cancels distinctions, undermines resolve, confuses intention with realization. It replaces hierarchy with accumulation, composition with addition. More and more, more is more. Junkspace is overripe and undernourishing at the same time, a colossal security blanket that covers the earth in a stranglehold of seduction . . . Junkspace is like being condemned to a perpetual Jacuzzi with millions of your best friends . . . A fuzzy empire of blur, it fuses high and low, public and private, straight and bent, bloated and starved to offer a seamless patchwork of the permanently disjointed. Seemingly an apotheosis, spatially grandiose, the effect of its richness is a terminal hollowness, a vicious parody of ambition that systematically erodes the credibility of building, possibly forever . . . Space was created by piling matter on top of matter, cemented to form a solid new whole. Junkspace is additive, layered, and lightweight, not articulated in different parts but subdivided, quartered the way a carcass is torn apart—individual chunks severed from a universal condition. There are no walls, only partitions, shimmering membranes frequently covered in mirror or gold. Structure groans invisibly underneath decoration, or worse, has become ornamental; small, shiny, space frames support nominal loads, or huge beams deliver cyclopic burdens to unsuspecting destinations . . . The arch, once the workhorse of structures, has become the depleted emblem of "community," welcoming an infinity of virtual populations to nonexistent theres. Where it is absent, it is simply applied—mostly in stucco—as ornamental afterthought on hurriedly erected superblocks. Junkspace's iconography is 13 percent Roman, 8 percent Bauhaus and 7 percent Disney (neck and neck), 3 percent Art Nouveau, followed

closely by Mayan . . . Like a substance that could have condensed in any other form, Junkspace is a domain of feigned, simulated order, a kingdom of morphing. Its specific configuration is as fortuitous as the geometry of a snowflake. Patterns imply repetition or ultimately decipherable rules; Junkspace is beyond measure, beyond code . . . Because it cannot be grasped, Junkspace cannot be remembered. It is flamboyant yet unmemorable, like a screen saver; its refusal to freeze ensures instant amnesia. Junkspace does not pretend to create perfection, only interest. Its geometries are unimaginable, only makable. Although strictly nonarchitectural, it tends to the vaulted, to the Dome. Some sections seem to be devoted to utter inertness, others in perpetual rhetorical turmoil: the deadest resides next to the most hysterical. Themes cast a pall of arrested development over interiors as big as the Pantheon, spawning stillbirths in every corner. The aesthetic is Byzantine, gorgeous, and dark, splintered into thousands of shards, all visible at the same time: a quasi-panoptical universe in which all contents rearrange themselves in split seconds around the dizzy eye of the beholder. Murals used to show idols; Junkspace's modules are dimensioned to carry brands; myths can be shared, brands husband aura at the mercy of focus groups. Brands in Junkspace perform the same role as black holes in the universe: they are essences through which meaning disappears . . . The shiniest surfaces in the history of mankind reflect humanity at its most casual. The more we inhabit the palatial, the more we seem to dress down. A stringent dress code—last spasm of etiquette?—governs access to Junkspace: shorts, sneakers, sandals, shell suit, fleece, jeans, parka, backpack. As if the People suddenly accessed the private quarters of a dictator, Junkspace is best enjoyed in a state of postrevolutionary gawking. Polarities have merged—there is nothing left between desolation and frenzy. Neon signifies both the old and the new; interiors refer to the Stone and Space Age at the same time. Like the deactivated virus in an inoculation, Modern architecture remains essential, but only in its most sterile manifestation, High Tech (it seemed so dead only a decade ago!). It exposes what previous generations kept under wraps: structures emerge like springs from a mattress; exit stairs dangle in a didactic trapeze; probes thrust into space to deliver laboriously what is in fact omnipresent, free air; acres of glass hang from spidery cables, tautly stretched skins enclose flaccid nonevents. Transparency only reveals everything in which you cannot partake. At the stroke of midnight it all may revert to Taiwanese Gothic; in three years it may segue into Nigerian Sixties, Norwegian Chalet, or default Christian. Earthlings now live in a kindergarten grotesque . . . Junkspace thrives on design, but design dies in Junkspace. There is no form, only proliferation . . . Regurgitation is the new creativity; instead of creation, we honor, cherish, and embrace manipulation . . . Superstrings of graphics, transplanted emblems of franchise and sparkling infrastructures of light, LEDs, and video describe an authorless world beyond anyone's claim, always unique, utterly unpredictable, yet intensely familiar. Junkspace is hot (or suddenly arctic); fluorescent walls, folded like melting stained glass, generate additional heat to raise the temperature of

Junkspace to levels at which you could cultivate orchids. Pretending histories left and right, its contents are dynamic yet stagnant, recycled or multiplied as in cloning: forms search for function like hermit crabs looking for a vacant shell . . . Junkspace sheds architectures like a reptile sheds skins, is reborn every Monday morning. In previous building, materiality was based on a final state that could only be modified at the expense of partial destruction. At the exact moment that our culture has abandoned repetition and regularity as repressive, building materials have become more and more modular, unitary, and standardized; substance now comes predigitized . . . As the module becomes smaller and smaller, its status become that of a crypto-pixel. With enormous difficulty—budget, argument, negotiation, deformation—irregularity and uniqueness are constructed from identical elements. Instead of trying to wrest order from chaos, the picturesque is now wrested from the homogenized, the singular liberated from the standardized . . . Architects thought of Junkspace first and named it Megastructure, the final solution to transcend their huge impasse. Like multiple Babels, huge superstructures would last through eternity, teeming with impermanent subsystems that would mutate over time, beyond their control. In Junkspace, the tables are turned: it is subsystem only, without superstructure, orphaned particles in search of a framework or pattern. All materialization is provisional: cutting, bending, tearing, coating: construction has acquired a new softness, like tailoring . . . The joint is no longer a problem, an intellectual issue: transitional moments are defined by stapling and taping, wrinkly brown bands barely maintain the illusion of an unbroken surface; verbs unknown and unthinkable in architectural history—clamp, stick, fold, dump, glue, shoot, double, fuse—have become indispensable. Each element performs its task in negotiated isolation. Where as detailing once suggested the coming together, possibly forever, of disparate materials, it is now a transient coupling, waiting to be undone, unscrewed, a temporary embrace with a high probability of separation; no longer the orchestrated encounter of difference, but the abrupt end of a system, a stalemate. Only the blind, reading its fault lines with their fingertips, will ever understand Junkspace's histories . . . While whole millennia worked in favor of permanence, axialities, relationships, and proportion, the program of Junkspace is escalation. Instead of development, it offers entropy. Because it is endless, it always leaks somewhere in Junkspace; in the worst case, monumental ashtrays catch intermittent drops in a gray broth . . . When did time stop moving forward, begin to spool in every direction, like a tape spinning out of control? Since the introduction of Real Time™? Change has been divorced from the idea of improvement. There is no progress; like a crab on LSD, culture staggers endlessly sideways . . . The average contemporary lunch box is a microcosm of Junkspace: a fervent semantics of health—slabs of eggplant, topped by thick layers of goat cheese—canceled by a colossal cookie at the bottom . . . Junkspace is draining and is drained in return. Everywhere in Junkspace there are seating arrangements, ranges of modular chairs, even couches, as if the experience Junkspace offers its consumers is significantly more exhausting than any previous

spatial sensation; in its most abandoned stretches, you find buffets: utilitarian tables draped in white or black sheets, perfunctory assemblies of caffeine and calories—cottage cheese, muffins, unripe grapes—notional representations of plenty, without horn and without plenty. Each Junkspace is connected, sooner or later, to bodily functions: wedged between stainless-steel partitions sit rows of groaning Romans, denim togas bunched around their huge sneakers . . . Because it is so intensely consumed, Junkspace is fanatically maintained, the night shift undoing the damage of the day shift in an endless Sisyphean replay. As you recover from Junkspace, Junkspace recovers from you: between 2 and 5 A.M., yet another population, this one heartlessly casual and appreciably darker, is mopping, hovering, sweeping, toweling, resupplying . . . Junkspace does not inspire loyalty in its cleaners . . . Dedicated to instant gratification, Junkspace accommodates seeds of future perfection; a language of apology is woven through its texture of canned euphoria; "pardon our appearance" signs or miniature yellow "sorry" billboards mark ongoing patches of wetness, announce momentary discomfort in return for imminent shine, the allure of improvement. Somewhere, workers sink on their knees to repair faded sections, as if in a prayer, or half-disappear in ceiling voids to negotiate elusive malfunctions, as if in confession. All surfaces are archaeological, superpositions of different "periods" (what do you call the moment a particular type of wall-to-wall carpet was current?)—as you note when they're torn . . . Traditionally, typology implies demarcation, the definition of a singular model that excludes other arrangements. Junkspace represents a reverse typology of cumulative, approximative identity, less about kind than about quantity. But formlessness is still form, the formless also a typology . . . Take the dump, where successive trucks discharge their loads to form a heap, whole in spite of the randomness of its contents and its fundamental shapelessness, or that of the tent-envelope that assumes different shapes to accommodate variable interior volumes. Or the vague crotches of the new generation. Junkspace can either be absolutely chaotic or frighteningly aseptic—like a best-seller—overdetermined and indeterminate at the same time. There is something strange about ballrooms, for instance: huge wastelands kept column-free for ultimate flexibility. Because you've never been invited to that kind of event, you have never seen them in use; you've only seen them being prepared with chilling precision: a relentless grid of circular tables, extending toward a distant horizon, their diameters preempting communication; a dais big enough for the politburo of a totalitarian state, wings announcing as yet unimagined surprises—acres of organization to support future drunkenness, disarray, and disorder. Or car shows . . . Junkspace is often described as a space of flows, but that is a misnomer; flows depend on disciplined movement, bodies that cohere. Junkspace is a web without a spider; although it is an architecture of the masses, each trajectory is strictly unique. Its anarchy is one of the last tangible ways in which we experience freedom. It is a space of collision, a container of atoms, busy, not dense . . . There is a special way of moving in Junkspace, at the same time aimless and purposeful. It is an acquired culture.

Junkspace features the tyranny of the oblivious: sometimes an entire Junkspace comes unstuck through the nonconformity of one of its members; a single citizen of an another culture—a refugee, a mother—can destabilize an entire Junkspace, hold it to a rustic's ransom, leaving an invisible swath of obstruction in his/her wake, a deregulation eventually communicated to its furthest extremities. Where movement becomes synchronized, it curdles: on escalators, near exits, parking machines, automated tellers. Sometimes, under duress, individuals are channeled in a flow, pushed through a single door or forced to negotiate the gap between two temporary obstacles (an invalid's bleeping chariot and a Christmas tree): the manifest ill will such narrowing provokes mocks the notion of flows. Flows in Junkspace lead to disaster: department stores at the beginning of sales; the stampedes triggered by warring compartments of soccer fans; dead bodies piling up in front of the locked emergency doors of a disco—evidence of the awkward fit between the portals of Junkspace and the narrow calibrations of the old world. The young instinctively avoid the Dante-esque manipulations/containers to which Junkspace has condemned their elders in perpetuity. Within the meta-playground of Junkspace exist smaller playgrounds, Junkspace for children (usually in the least desirable square footage): sections of sudden miniaturization—often underneath staircases, always near dead ends—and assemblies of underdimensioned plastic structures—slides, seesaws, swings—shunned by their intended audience are turned into a Junkniche for the old, the lost, the forgotten, the insane . . . the last hiccup of humanism . . . Traffic is Junkspace, from airspace to the subway; the entire highway system is Junkspace, a vast potential utopia clogged by its users, as you notice when they've finally disappeared on vacation . . . Like radioactive waste, Junkspace has an insidious half-life. Aging in Junkspace is nonexistent or catastrophic; sometimes an entire Junkspace—a department store, a nightclub, a bachelor pad—turns into a slum overnight without warning: wattage diminishes imperceptibly, letters drop out of signs, air-conditioning units start dripping, cracks appear as if from otherwise unregistered earthquakes; sections rot, are no longer viable, but remain joined to the flesh of the main body via gangrenous passages. Judging the built presumed a static condition; now each architecture embodies opposite conditions simultaneously: old and new, permanent and temporary, flourishing and at risk . . . Sections undergo an Alzheimer's-like deterioration as others are upgraded. Because Junkspace is endless, it is never closed . . . Renovation and restoration were procedures that took place in your absence; now you're a witness, a reluctant participant . . . Seeing Junkspace in conversion is like inspecting an unmade bed, someone else's. Say an airport needs more space. In the past, new terminals were added, each more or less characteristic of its own age, leaving the old ones as a readable record, evidence of progress. Since passengers have definitively demonstrated their infinite malleability, the idea of rebuilding on the spot has gained currency. Travelators are thrown into reverse, signs taped, potted palms (or very large corpses) covered in body bags. Screens of taped Sheetrock segregate two populations: one wet, one dry, one

hard, one flabby, one cold, one overheated. Half the population produces new space; the more affluent half consumes old space. To accommodate a nether world of manual labor, the concourse suddenly turns into Casbah: improvised locker rooms, coffee breaks, smoking, even real campfires . . . The ceiling is a crumpled plate like the Alps; grids of unstable tiles alternate with monogrammed sheets of black plastic, improbably punctured by grids of crystal chandeliers . . . Metal ducts are replaced by breathing textiles. Gaping joints reveal vast ceiling voids (former canyons of asbestos?), beams, ducting, rope, cable, insulation, fireproofing, string; tangled arrangements suddenly exposed to daylight. Impure, tortured, and complex, they exist only because they were never consciously plotted. The floor is a patchwork: different textures—concrete, hairy, heavy, shiny, plastic, metallic, muddy—alternate randomly, as if dedicated to different species . . . The ground is no more. There are too many raw needs to be realized on only one plane. The absolute horizontal has been abandoned. Transparency has disappeared, to be replaced by a dense crust of provisional occupation: kiosks, carts, strollers, palms, fountains, bars, sofas, trolleys . . . Corridors no longer simply link A to B, but have become "destinations." Their tenant life tends to be short: the most stagnant windows, the most perfunctory dresses, the most implausible flowers. All perspective is gone, as in a rainforest (itself disappearing, they keep saying . . .). The formerly straight is coiled into evermore complex configurations. Only a perverse modernist choreography can explain the twists and turns, the ascents and descents, the sudden reversals that comprise the typical path from check-in (misleading name) to the apron of the average contemporary airport. Because we never reconstruct or question the absurdity of these enforced *dérives*, we meekly submit to grotesque journeys past perfume, asylum-seekers, building site, underwear, oysters, pornography, cell phone—incredible adventures for the brain, the eye, the nose, the tongue, the womb, the testicles . . . There was once a polemic about the right angle and the straight line; now the ninetieth degree has become one among many. In fact, remnants of former geometries create ever new havoc, offering forlorn nodes of resistance that create unstable eddies in newly opportunistic flows . . . Who would dare claim responsibility for this sequence? The idea that a profession once dictated, or at least presumed to predict, people's movements now seems laughable, or worse: unthinkable. Instead of design, there is calculation: the more erratic the path, eccentric the loops, hidden the blueprint, efficient the exposure, the more inevitable the transaction. In this war, graphic designers are the great turncoats: Where once signage promised to deliver you to where you wanted to be, it now obfuscates and entangles you in a thicket of cuteness that forces you past unwanted detours, turns you back when you're lost. Postmodernism adds a crumple-zone of viral *poché* that fractures and multiplies the endless frontline of display, a peristaltic shrink-wrap crucial to all commercial exchange. Trajectories are launched as ramp, turn horizontal without any warning, intersect, fold down, suddenly emerge on a vertiginous balcony above a large void. Fascism minus dictator. From the sudden dead end where you were

dropped by a monumental, granite staircase, an escalator takes you to an invisible destination, facing a provisional vista made of plaster, inspired by forgettable sources. (There is no datum level; you always inhabit a sandwich. "Space" is scooped out of Junkspace as from a soggy block of ice cream that has languished too long in the freezer: cylindrical, cone-shaped, more or less spherical, whatever . . .) Toilet groups mutate into Disney Stores then morph to become meditation centers: Successive transformations mock the word "plan." The plan is a radar screen where individual pulses survive for unpredictable periods of time in a Bacchanalian free-for-all . . . In this standoff between the redundant and the inevitable, a plan would actually make matters worse, would drive you to instant despair. Only the diagram gives a bearable version. There is zero loyalty—and zero tolerance—toward configuration, no "original" condition; architecture has turned into a time-lapse sequence to reveal a "permanent evolution." . . . The only certainty is conversion—continuous—followed, in rare cases, by "restoration," the process that claims ever new sections of history as extensions of Junkspace. History corrupts, absolute history corrupts absolutely. Color and matter are eliminated from these bloodless grafts: the bland has become the only meeting ground for the old and the new . . . Can the bland be amplified? The featureless be exaggerated? Through height? Depth? Length? Variation? Repetition? Sometimes not overload but its opposite, an absolute absence of detail, generates Junkspace. A voided condition of frightening sparseness, shocking proof that so much can be organized by so little. Laughable emptiness infuses the respectful distance or tentative embrace that starchitects maintain in the presence of the past, authentic or not. Invariably, the primordial decision is to leave the original intact; the formerly residual is declared the new essence, the focus of the intervention. As a first step, the substance to be preserved is wrapped in a thick pack of commerce and catering—like a reluctant skier pushed downhill by responsible minders. To show respect, symmetries are maintained and helplessly exaggerated; ancient building techniques are resurrected and honed to irrelevant shine, quarries reopened to excavate the "same" stone, indiscreet donor names chiseled prominently in the meekest of typefaces; the courtyard covered by a masterful, structural "filigree"—emphatically uncompetitive—so that continuity may be established with the "rest" of Junkspace (abandoned galleries, display slums, Jurassic concepts . . .). Conditioning is applied; filtered daylight reveals vast, antiseptic expanses of monumental reticence and makes them come alive, vibrant as a computer rendering . . . The curse of public space: latent fascism safely smothered in signage, stools, sympathy . . . Junkspace is postexistential; it makes you uncertain where you are, obscures where you go, undoes where you were. Who do you think you are? Who do you want to be? (Note to architects: You thought that you could ignore Junkspace, visit it surreptitiously, treat it with condescending contempt or enjoy it vicariously . . . because you could not understand it, you've thrown away the keys . . . But now your own architecture is infected, has become equally smooth, all-inclusive, continuous, warped, busy, atrium-ridden . . .) JunkSignature™ is the new architec-

ture: the former megalomania of a profession contracted to manageable size, Junkspace minus its saving vulgarity. Anything stretched—limousines, body parts, planes—turns into Junkspace, its original concept abused. Restore, rearrange, reassemble, revamp, renovate, revise, recover, redesign, return—the Parthenon marbles—redo, respect, rent: verbs that start with re-produce Junkspace . . . Junkspace will be our tomb. Half of mankind pollutes to produce, the other pollutes to consume. The combined pollution of all Third World cars, motorbikes, trucks, buses, sweatshops pales into insignificance compared to the heat generated by Junkspace. Junkspace is political: It depends on the central removal of the critical faculty in the name of comfort and pleasure. Politics has become manifesto by Photoshop, seamless blueprints of the mutually exclusive, arbitrated by opaque NGOs. Comfort is the new Justice. Entire miniature states now adopt Junkspace as political program, establish regimes of engineered disorientation, instigate a politics of systematic disarray. Not exactly "anything goes"; in fact, the secret of Junkspace is that it is both promiscuous and repressive: as the formless proliferates, the formal withers, and with it all rules, regulations, recourse . . . Babel has been misunderstood. Language is not the problem, just the new frontier of Junkspace. Mankind, torn by eternal dilemmas, the impasse of seemingly endless debates, has launched a new language that straddles unbridgeable divides like a fragile designer's footbridge . . . coined a proactive wave of new oxymorons to suspend former incompatibility: life/style, reality/TV, world/music, museum/store, food/court, health/care, waiting/lounge. Naming has replaced class struggle, sonorous amalgamations of status, high-concept, and history. Through acronym, unusual importation, suppressing letters, or fabrication of nonexistent plurals, they aim to shed meaning in return for a spacious new roominess . . . Junkspace knows all your emotions, all your desires. It is the interior of Big Brother's belly. It preempts people's sensations. It comes with a sound track, smell, captions; it blatantly proclaims how it wants to be read: rich, stunning, cool, huge, abstract, "minimal," historical. It sponsors a collective of brooding consumers in surly anticipation of their next spend, a mass of refractory periods caught in a Thousand Year Reign of Razzmatazz, a paroxysm of prosperity. The subject is stripped of privacy in return for access to a credit nirvana. You are complicit in the tracing of the fingerprints each of your transactions leaves; they know everything about you, except who you are. Emissaries of Junkspace pursue you in the formerly impervious privacy of the bedroom: the minibar, private fax machines, pay-TV offering compromised pornography, fresh plastic veils wrapping toilets seats, courtesy condoms: miniature profit centers coexist with your bedside bible . . . Junkspace pretends to unite, but it actually splinters. It creates communities not out of shared interest or free association, but out of identical statistics and unavoidable demographics, an opportunistic weave of vested interests. Each man, woman, and child is individually targeted, tracked, split off from the rest . . . Fragments come together at "security" only, where a grid of video screens disappointingly reassembles individual frames into a banalized, utilitarian cubism

that reveals Junkspace's overall coherence to the dispassionate glare of barely trained guards: video-ethnography in its brute form. Just as Junkspace is unstable, its actual ownership is forever being passed on in parallel disloyalty. Junkspace happens spontaneously through natural corporate exuberance—the unfettered play of the market—or is generated through the combined actions of temporary "czars" with long records of three-dimensional philanthropy, bureaucrats (often former leftists) that optimistically sell off vast tracts of waterfront, former hippodromes, military bases and abandoned airfields to developers or real-estate moguls who can accommodate any deficit in futuristic balances, or through Default Preservation™ (the maintenance of historical complexes that nobody wants but that the Zeitgeist has declared sacrosanct). As its scale mushrooms—rivals and even exceeds that of the Public—its economy becomes more inscrutable. Its financing is a deliberate haze, clouding opaque deals, dubious tax breaks, unusual incentives, exemptions, tenuous legalities, transferred air rights, joined properties, special zoning districts, public-private complicities. Funded by bonds, lottery, subsidy, charity, grant: An erratic flow of yen, Euros, and dollars creates financial envelopes that are as fragile as their contents. Because of a structural shortfall, a fundamental deficit, a contingent bankruptcy, each square inch becomes a grasping, needy surface dependent on covert or overt support, discount, compensation and fund-raising. For culture, "engraved donor bricks"; for everything else: cash, rentals, leases, franchises, the underpinning of brands. Junkspace expands with the economy but its footprint cannot contract—when it is no longer needed, it thins. Because of its tenuous viability, Junkspace has to swallow more and more program to survive; soon, we will be able to do anything anywhere. We will have conquered place. At the end of Junkspace, the Universal? Through Junkspace, old aura is transfused with new luster to spawn sudden commercial viability: Barcelona amalgamated with the Olympics, Bilbao with the Guggenheim, Forty-second Street with Disney. God is dead, the author is dead, history is dead, only the architect is left standing . . . an insulting evolutionary joke . . . A shortage of masters has not stopped a proliferation of masterpieces. "Masterpiece" has become a definitive sanction, a semantic space that saves the object from criticism, leaves its qualities unproven, its performance untested, its motives unquestioned. Masterpiece is no longer an inexplicable fluke, a roll of the dice, but a consistent typology: its mission to intimidate, most of its exterior surfaces bent, huge percentages of its square footage dysfunctional, its centrifugal components barely held together by the pull of the atrium, dreading the imminent arrival of forensic accounting . . . The more indeterminate the city, the more specific its Junkspace; all of Junkspace's prototypes are urban—the Roman Forum, the Metropolis; it is only their reverse synergy that makes them suburban, simultaneously swollen and shrunk. Junkspace reduces what is urban to urbanity . . . Instead of public life, Public Space™: what remains of the city once the unpredictable has been removed . . . Space for "honoring," "sharing," "caring," "grieving," and "healing" . . . civility imposed by an overdose of serif . . . In the third

Millennium, Junkspace will assume responsibility for pleasure and religion, exposure and intimacy, public life and privacy. Inevitably, the death of God (and the author) has spawned orphaned space; Junkspace is authorless, yet surprisingly authoritarian . . . At the moment of its greatest emancipation, humankind is subjected to the most dictatorial scripts: from the pushy oration of the waiter to the answering gulags on the other end of the telephone, the safety instructions on the airplane, more and more insistent perfumes, mankind is browbeaten into submiting to the most harshly engineered plotline . . . The chosen theater of megalomania—the dictatorial—is no longer politics, but entertainment. Through Junkspace, entertainment organizes hermetic regimes of ultimate exclusion and concentration: concentration gambling, concentration golf, concentration convention, concentration movie, concentration culture, concentration holiday. Entertainment is like watching a once-hot planet cool off; its major inventions are ancient: the moving image, the roller coaster, recorded sound, cartoons, clowns, dinosaurs, news, war. Except for celebrities—of which there is a dramatic shortage—we have added nothing, just reconfigured. Corpotainment is a galaxy in contraction, forced to go through the motions by ruthless Copernican laws. The secret of corporate aesthetics was the power of elimination, the celebration of the efficient, the eradication of excess: abstraction as camouflage, the search for a Corporate Sublime. On popular demand, organized beauty has become warm, humanist, inclusivist, arbitrary, poetic, and unthreatening: water is pressurized through very small holes, then forced into rigorous hoops; straight palms are bent into grotesque poses, air is burdened with added oxygen—as if only forcing malleable substances into the most drastic contortions maintains control, satisfies the drive to get rid of surprise. Not canned laughter, but canned euphoria . . . Color has disappeared to dampen the resulting cacophony, and is used only as cue: relax, enjoy, be well, we're united in sedation . . . Why can't we tolerate stronger sensations? Dissonance? Awkwardness? Genius? Anarchy? . . . Junkspace heals, or at least that is the assumption of many hospitals. We thought the hospital was unique—a universe that identified by its smell—but now that we are used to universal conditioning we recognize it was merely a prototype; all Junkspace is defined by its smell. Often heroic in size, planned with the last adrenaline of modernism's grand inspiration, we have made them (too) human; life or death decisions are taken in spaces that are relentlessly friendly, littered with fading bouquets, empty coffee cups, and yesterday's papers. You used to face death in appropriate cells; now your nearest are huddled together in atriums. A bold datum line is established on every vertical surface, dividing the infirmary in two: above an endless humanist scroll of "color," loved ones, children's sunsets, signage, and art . . . below a utilitarian zone for defacement and disinfectant, anticipated collision, scratch, spill, and smudge . . . Junkspace is space as vacation; there once was a relationship between leisure and work, a biblical dictate that divided our weeks, organized public life. Now we work harder, marooned in a never-ending casual Friday . . . The office is the next frontier of Junkspace. Since you can work at

home, the office aspires to the domestic; because you still need a life, it simulates the city. Junkspace features the office as the urban home, a meeting-boudoir: desks become sculptures, the work-floor is lit by intimate downlights. Monumental partitions, kiosks, mini-Starbucks on interior plazas: a Post-it universe: "team memory," "information persistence"; futile hedges against the universal forgetting of the unmemorable, the oxymoron as mission statement. Witness corporate agit-prop: the CEO's suite becomes "leadership collective," wired to all the world's other Junkspace, real or imagined. *Espace* becomes E-space. The twenty-first century will bring "intelligent" Junkspace: on a big digital "dashboard": sales, CNNNYSENASDAQC-SPAN, anything that goes up or down, from good to bad, presented in real time like the automotive-theory course that complements driving lessons . . . Globalization turns language into Junkspace. We are stuck in a speech-doldrums. The ubiquity of English is Pyrrhic: now that we all speak it, nobody remembers its use. The collective bastardization of English is our most impressive achievement; we have broken its back with ignorance, accent, slang, jargon, tourism, outsourcing, and multitasking . . . we can make it say anything we want, like a speech dummy . . . Through the retrofitting of language, there are too few plausible words left; our most creative hypotheses will never be formulated, discoveries will remain unmade, concepts unlaunched, philosophies muffled, nuances miscarried . . . We inhabit sumptuous Potemkin suburbs of weasel terminologies. Aberrant linguistic ecologies sustain virtual subjects in their claim to legitimacy, help them survive . . . Language is no longer used to explore, define, express, or to confront but to fudge, blur, obfuscate, apologize, and comfort . . . it stakes claims, assigns victimhood, preempts debate, admits guilt, fosters consensus. Entire organizations and/or professions impose a descent into the linguistic equivalent of hell: condemned to a word-limbo, inmates wrestle with words in ever-descending spirals of pleading, lying, bargaining, flattening . . . a Satanic orchestration of the meaningless . . . Intended for the interior, Junkspace can easily engulf a whole city. First, it escapes from its containers—semantic orchids that needed hothouse protection emerging with surprising robustness—then the outdoors itself is converted: the street is paved more luxuriously, shelters proliferate carrying increasingly dictatorial messages, traffic is calmed, crime eliminated. Then Junkspace spreads like a forest fire in L.A. . . . The global progress of Junkspace represents a final Manifest Destiny: the World as public space . . . All of the resurrected emblems and recycled ambers of the formerly public need new pastures. A new vegetal is corralled for its thematic efficiency. The outing of Junkspace has triggered the professionalization of denaturing, a benign eco-fascism that positions a rare surviving Siberian tiger in a forest of slot machines, near Armani, amid a twisted arboreal Baroque . . . Outside, between the casinos, fountains project entire Stalinist buildings of liquid, ejaculated in a split second, hovering momentarily, then withdrawing with an amnesiac competency . . . Air, water, wood: All are enhanced to produce Hyperecology™, a parallel Walden, a new rainforest. Landscape has become Junkspace, foliage as spoilage: Trees are

tortured, lawns cover human manipulations like thick pelts, or even toupees, sprinklers water according to mathematical timetables . . . Seemingly at the opposite end of Junkspace, the golf course is, in fact, its conceptual double: empty, serene, free of commercial debris. The relative evacuation of the golf course is achieved by the further charging of Junkspace. The methods of their design and realization are similar: erasure, tabula rasa, reconfiguration. Junkspace turns into biojunk; ecology turns into ecospace. Ecology and economy have bonded in Junkspace as ecolomy. The economy has become Faustian; hyperdevelopment depends on artificial underdevelopment; a huge global bureaucracy is in the making to settle, in a colossal yin/yang, the balance between Junkspace and golf, between the scraped and the 'scaped, trading the right to despoil for the obligation to create steroid rainforests in Costa Rica. Oxygen banks, Fort Knoxes of chlorophyll, eco-reserves as a blank check for further pollution. Junkspace is rewriting the apocalypse; we may die of oxygen poisoning . . . In the past, the complexities of Junkspace were compensated for by the stark rawness of its adjunct infrastructures: parking garages, filling stations, distribution centers routinely displaying a monumental purity that was the original aim of modernism. Now, massive injections of lyricism have enabled an infrastructure—the one domain previously immune to design, taste, or the marketplace—to join the world of Junkspace, and for Junkspace to extend its manifestations under the sky. Railway stations unfold like iron butterflies, airports glisten like cyclopic dewdrops, bridges span often negligible banks like grotesquely enlarged versions of the harp. To each rivulet its own Calatrava. (Sometimes when there is a strong wind, this new generation of instruments shakes as if being played by a giant, or maybe a God, and mankind shudders . . .) Junkspace can be airborne, bring malaria to Sussex; 300 anopheline mosquitoes arrive each day at GDG and GTW with ability, theoretically, to infect eight to twenty locals in a three-mile radius, a hazard exacerbated by the average passenger's reluctance, in a misplaced gasp of quasi-autonomy, to be disinfected once he or she has buckled up for the return journey from the dead end of the tourist destination. Airports, provisional accommodation for those going elsewhere, inhabited by assemblies united only by the imminence of their dissolution, have turned into consumption gulags, democratically distributed across the globe to give every citizen an equal chance of admission . . . MXP looks as if all of the leftovers of East Germany's reconstruction—whatever was needed to undo the deprivations of Communism—have been hurriedly bulldozed together according to a vaguely rectangular blueprint to form a botched sequence of deformed, inadequate spaces (apparently willed into being by the current rulers of Europe, who extort limitless Euros from the community's regional funds, causing endless delays for its duped taxpayers too busy on cell phones to notice). DFW is composed of three elements only, repeated ad infinitum, nothing else: one kind of beam, one kind of brick, one kind of tile, all coated in the same color—is it teal? Rust? Tobacco? With symmetries scaled beyond any possibility of recognition, the endless curve of its terminals forces its

users to enact relativity theory in their quest for the gate. Its dropoff is the seemingly harmless beginning of a journey to the heart of unmitigated nothingness, beyond the animation provided by Pizza Hut, Dairy Queen . . . Valley cultures were thought to be the most resistant to Junkspace: at GVZ you can still see a universe of rules, order, hierarchy, neatness, coordination, poised moments before its implosion, but at ZHR huge "timepieces" hover in front of interior waterfalls as an essay in Regionaljunk. Duty-free is Junkspace; Junkspace is duty-free space. Where culture was thinnest, will it be the first to run out? Is emptiness local? Do wide open spaces demand wide open Junkspace? Sunbelt: huge populations where there was nothing; PHX: warpaint on every terminal, dead Indian outlines on every surface—carpet, wallpaper, napkins—like frogs flattened by car tires. Public Art distributed across LAX: the fish that have disappeared from our rivers return as public art in the concourse; only what is dead can be resurrected. Memory itself may have turned into Junkspace; only those murdered will be remembered . . . Deprivation can be caused by overdose or shortage; both conditions happen in Junkspace (often at the same time). Minimum is the ultimate ornament, a self-righteous crime, the contemporary Baroque. It does not signify beauty, but guilt. Its demonstrative earnestness drives whole civilizations into the welcoming arms of camp and kitsch. Ostensibly a relief from constant sensorial onslaught, minimum is maximum in drag, a stealth laundering of luxury: the stricter the lines, the more irresistible the seductions. Its role is not to approximate the sublime, but to minimize the shame of consumption, drain embarrassment, to lower what is higher. The minimum now exists in a state of parasitic codependency with the overdose: to have and not to have, craving and owning, finally collapsed in a single signifier . . . Museums are sanctimonious Junkspace; there is no sturdier aura than holiness. To accommodate the converts they have attracted by default, museums massively turn "bad" space into "good" space; the more untreated the oak, the larger the profit center. Monasteries inflated to the scale of department stores: expansion is the Third Millennium's entropy, dilute or die. Dedicated to mostly respecting the dead, no cemetery would dare to reshuffle corpses as casually in the name of current expediency; curators plot hangings and unexpected encounters in a donor-plate labyrinth with the finesse of the retailer: lingerie becomes "Nude, Action, Body," cosmetics "History, Memory, Society." All paintings based on black grids are herded together in a single white room. Large spiders in the humongous conversion offer delirium for the masses . . . Narrative reflexes that have enabled us from the beginning of time to connect dots, fill in blanks, are now turned against us: we cannot stop noticing—no sequence is too absurd, trivial, meaningless, insulting . . . Through our ancient evolutionary equipment, our irrepressible attention span, we helplessly register, provide insight, squeeze meaning, read intention; we cannot stop making sense out of the utterly senseless . . . On its triumphal march as content provider, art extends far beyond the museum's ever-increasing boundaries. Outside, in the real world, the "art planner" spreads Junkspace's fundamental incoherence by assigning defunct

mythologies to residual surfaces and plotting three-dimensional works in leftover emptiness. Scouting for authenticity, his or her touch seals the fate of what was real, taps it for incorporation in Junkspace. Art galleries move en masse to "edgy" locations, then convert raw space into white cubes . . . The only legitimate discourse is loss; art replenishes Junkspace in direct proportion to its own morbidity. We used to renew what was depleted; now we try to resurrect what is gone . . . Outside, the architect's footbridge is rocked to the breaking point by a stampede of enthusiastic pedestrians; the designer's initial audacity now awaits the engineer's application of dampers. Junkspace is a look-no-hands world . . . The constant threat of virtuality in Junkspace is no longer exorcized by petrochemical products, plastic, vinyl or rubber; the synthetic cheapens. Junkspace has to exaggerate its claims to the authentic. Junkspace is like a womb that organizes the transition of endless quantities of the Real—stone, trees, goods, daylight, people—into the unreal. Entire mountains are dismembered to provide ever-greater quantities of authenticity, suspended on precarious brackets, polished to a blinding state of flash that renders the intended earnestness instantly elusive. Stone only comes in light yellow, flesh, a violent beige, a soaplike green, the colors of Communist plastics in the 1950s. Forests are felled, their wood all pale: maybe the origins of Junkspace go back to the kindergarten . . . ("Origins" is a mint shampoo that stings the anal region.) Color in the real world looks increasingly unreal, drained. Color in virtual space is luminous, therefore irresistible. A surfeit of reality-TV has made us into amateur guards monitoring a Junkuniverse . . . From the lively breasts of the classical violinist to the designer stubble of the Big Brother outcast, the contextual pedophilia of the former revolutionary, the routine addictions of the stars, the runny makeup of the evangelist, the robotic body language of the conductor, the dubious benefits of the fund-raising marathon, the futile explanations of the politician: the swooping movement of the TV camera suspended from its boom—an eagle without beak or claws, just an optical stomach—swallows images and confessions indiscriminately, like a trash bag, to propel them as cyber-vomit in space. TV-studio sets—garishly monumental—are both the culmination and the end of perspectival space as we've known it: angular geometric remnants invading starry infinities; real space edited for smooth transmission in virtual space, crucial hinge in an infernal feedback loop . . . the vastness of Junkspace extended to the edges of the Big Bang. Because we spend our life indoors—like animals in a zoo—we are obsessed with the weather: 40 percent of all TV consists of presenters of lesser attractiveness gesturing helplessly in front of windswept formations, through which you recognize, sometimes, your own destination/current position. Conceptually, each monitor, each TV screen is a substitute for a window; real life is inside, while cyberspace has become the great outdoors . . . Mankind is always going on about architecture. What if space started looking at mankind? Will Junkspace invade the body? Through the vibes of the cell phone? Has it already? Through Botox injections? Collagen? Silicone implants? Liposuction? Penis enlargements? Does gene therapy announce a total reengineering according to

Junkspace? Is each of us a mini-construction site? Is mankind the sum of three to five billion individual upgrades? Is it a repertoire of reconfiguration that facilitates the intromission of a new species into its self-made Junksphere? The cosmetic is the new cosmic . . .