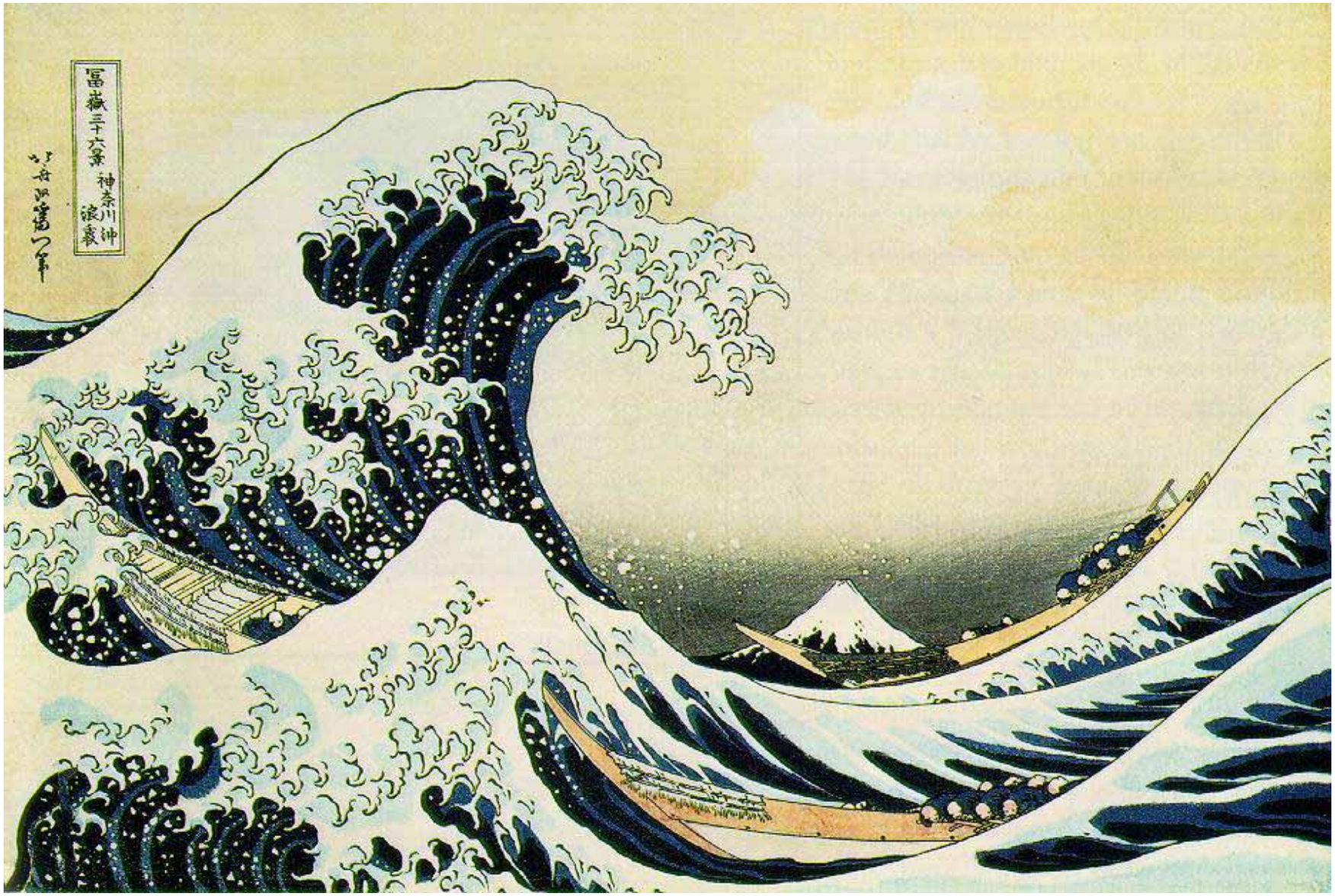
THE MONUMENTS OF CHANDIGARH



The Great Wave Of Kanagawa by Hokusai, c. 1823

Icarus, a long time ago, broke his limbs.

Leonardo Da Vinci (I tested it at the magnificent Aeronautical Exhibition at Milan, 1934) understood everything about aviation. He was tireless in designing machines that are astonishingly of today. The solution was in his grasp. But the internal combustion engine was lacking. The automobile of 1900 has made contemporary aviation because of the combustion engine.

It must not be forgotten that a learned man devoted himself to the study of the flight of the great gliding birds of the Himalayas. He wrote a report of this subject for the Paris Academy of Science. The great gliding birds traverse the sky by means of the supporting plane of their wings; but these wings are neither flat nor rigid; they are tilted, and it is by imperceptible modifications of the supporting plane that these great gliders keep in the air for hours without moving their wings.

What a beautiful lesson to those who cling a little stupidly to the extreme materialist theory of today which lays down that every solution derives strictly from "deductive" (as they say) analysis.

Here we have (a) the automobile jolting along the hundred-year-old wagon roads of France; (b) the savant studying the Himalayan sky and its vultures.

What makes life is the spark which lights up in vigilant beings, in sensitive beings, in beings sympathizing with all things, in those who are animated by creative power—that magistral gift which is cultivated and developed by modesty, disinterestedness, and perseverance ....

REFORM IS IN THE VERY ESSENCE OF THINGS. IT LIES AT THE HEART OF CRAFTSMANSHIP. REVOLUTION IS ACCOMPLISHED BY THE CUMULATIVE EFFECT OF DETAILS.

Remarks taken from *Aircraft*, by Le Corbusier, 1935 in the series "The New Vision", whose other title at the time was *World Beneath the Microscope*.

ARCHITECTURE TAKES TIME

Things come and go. If love makes the world go round, then the transition from state to state can be an event of connection, just as a synapse is a jump of relation and DNA is a template for biological evolution. Should not architecture also be concerned with the order of spatial change as well as static space configurations?

Most people assume architecture is important buildings and cities, which take so long to make that they should last a long time. This suggests that architecture is the making of habitable monuments. An architecture of transformations, meaningful to both continuity and change, allows another interpretation, as we shall come to know.

To a carpenter any chisel which fits the hand and is sharp and balanced will do the job. To a collector, each chisel is unique and irreplaceable. Soon it may be possible to simulate three dimensional events with such high fidelity that even the material of the original may be replicated. A variety of chemical structures could also be so instructed to a particular array that a sharp knife, resilient sponge, or cheese food will be equally reproduced with the clarity we now expect from recordings of clarinet, cello, or ocean.

Already acceptance of "artificial" products implies that we distinguish between the corporeality ("the nature of materials") and the ideal form ("the plan is the generator") of an object. The further we depart from considerations of material, the more we depend upon pure plastic, architectonic, and syntactical manipulations for the meaning of form, and the closer we get to the idea of object as archetype. For composers this activity can be endlessly fascinating. But the relation between form and change is called into question when we consider an architecture in a living world.

Architecture today is often out of place. A city full of office buildings is uninhabited at night while elaborate energy is devoted to the surface of a drive-in eatery which may well be torn down in five years. The intrinsic worth of humanly ordered space is rarely held sacred in our culture. Why care about architecture when it just adds baggage to something that is impermanent or invisible anyway? Some architects still design as if their work will last forever while others embrace Disposable as inevitable. In one case change and in the other stasis are ignored. Life, however, suggests as solution to this dilemma, the possibility of an architecture of transformations.

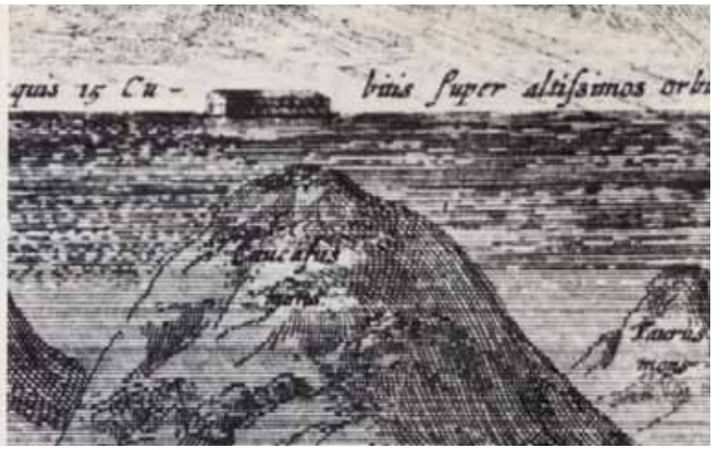
MONUMENT

All the discussion about "monumentality" in contemporary architecture seems to overlook the fundamental meaning of the term. A monument is an object for reminding, a bringing-to-mind substance, a device for the memory. Common images of monument include the Washington Monument, Lincoln Memorial, and equestrian war hero statues. The Pyramids of Egypt, most enduring of human artifacts, are also closest in form to the archetype of all monument—the Mountain. To the Chinese, the chief attribute of mountain is Keeping Still (1). A mountain, despite erosion, above all endures; it is the plastic event that lasts beyond all others in the human landscape. To borrow Van Den Berg's terms, we may say the time character of monument is Duration (2). A monument apparently denies change, either in configuration or location. By attempting to create a constant form for all times, a monument tends to reify time.

VESSEL

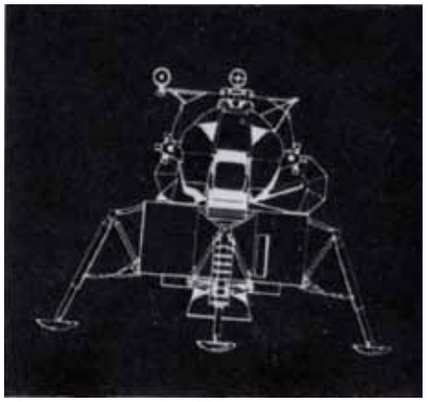
By contrast, a vessel, is an object which tends to reify space. A vessel is a container whose contents remain constant, despite all changes in exterior location or configuration. The grain elevators, pipes, bottles, cars, ships, and airplanes which furnish so much of modern architecture's imagery share common topological characteristics. They are all vessels. Vessel is a curious word which includes in its meaning the notion of vase, ship, and plate. Vas, the Latin root of the word refers to things hollow. Once a vessel is filled, packed, or loaded, the contents can be transported while maintaining constant relationships. The edge of a vessel is generally distinct, hard, definite, and usually impermeable to the surrounding medium. Ships of course are archetypal vessels, because the sea is the clearest instance of an ever changing field, where every fluctuation in the weather makes new demands on the structure's organization and integrity. Like a surfboard amidst the breakers, a vessel leaves no footprints because the surrounding events change so fast as to obliterate any impact on the field.

3. Ting Bronze Vessel, China, Shang Dynasty, 1100 BC



4. Noah's Ark above the Caucasus

An igloo, the Lunar Module, or Ledoux' House for a Constable are dwelling vessels, isolated wholes which hardly affect or are affected by the surrounding landscape. Again to use Van Den Berg's terminology, we may say that the time character of vessel is Tempo. Both monument and vessel diminish the changing nature of things beyond their own realms. One of the tenets of modern physics, according to Whitehead, is that things exist only insofar as they affect the community of experience around them (3). Things only truly exist as events in spacetime.* Apparently time, light, space, matter, and gravitation are all part of the same interdependent structuring of our geometrodynamic universe. As the physicists Misner, Thorne and Wheeler have said: "Space tells matter how to move. Matter tells space how to curve."(4)



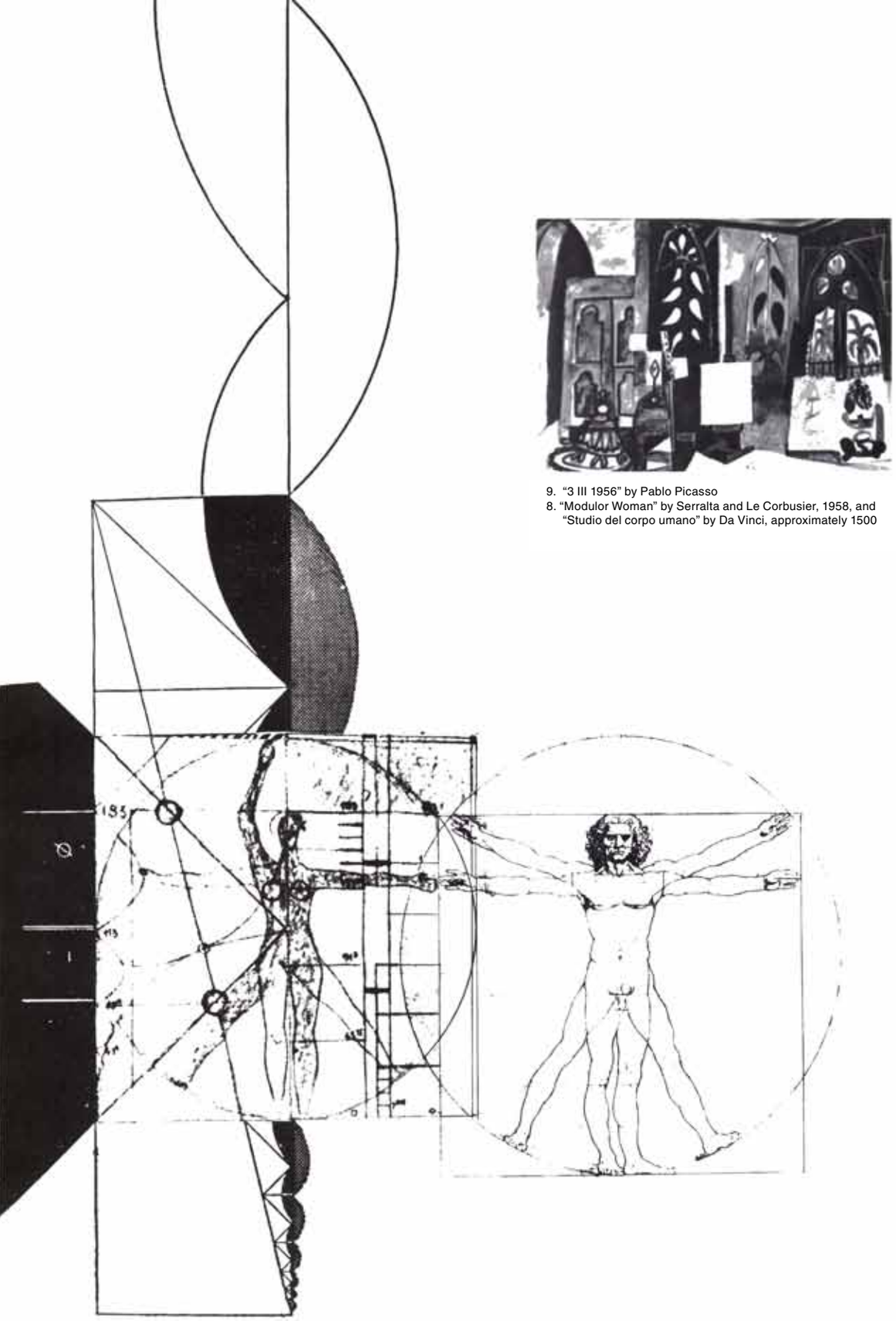
5. Lunar Module. NASA, 1969

6. Quarters for Rural Caretakers, Claude Nicolas Ledoux, 1804

*for a full discussion of the term "spacetime" see Taylor/ Wheeler, Spacetime Physics, Freeman, San Francisco, 1966 . Throughout this paper when we use "space" or "time" we use them in the common everyday and historical sense. For such, usage, space is still quite distinct from time. Thus it is probably reasonable to say that even Borromini thought he was making spaces, not spacetimes: that is, he was working with length, width, breadth, and sunlight making shadows. Only after we understand how time may be measured in meters does the term spacetime have any meaning. Light travels 3 X 108 m/sec so we can say that 1 sec = 3 X 108 m of light travel distance, or simply that using light as a standard, a time interval may be measured by a distance interval.

Before the 20th century it was the human experience that spaces did not seem to change the same way time did. Generally there appeared to be no limit to where we could go or how often we returned, but we seemed to live only so many years and could not become younger. We know now that this is not the case. The hint is there: "he that is not busy being born is busy dying", but we have not generally developed the art.

7. "Carrier City in Landscape" by Hans Hollein, 1964



9. “3 III 1956” by Pablo Picasso
8. “Modulor Woman” by Serralta and Le Corbusier, 1958, and “Studio del corpo umano” by Da Vinci, approximately 1500

GNOMON

There is another class of object whose primary intention is neither to reify space or time exclusively. This class reifies event, or spacetime, and we shall call such Gnomon. A gnomon is a standard which measures change.

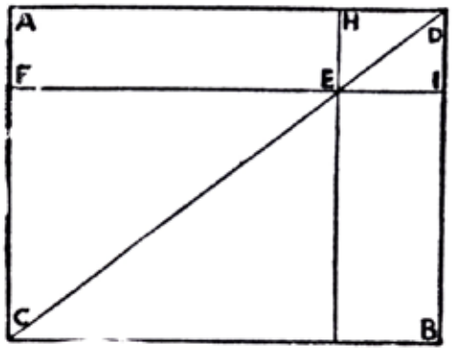
Gnomon is a Creek word originally meaning the carpenter’s square, and by extension “inspector” or “indicator”. The Greek root Cno-is the source of a series of words which mean thought, judgement, opinion, maxim or precept. Our word Know directly follows. In common usage gnomon has also come to mean sundial, particularly the pin or triangular plate, but generally any pillar or rod or other device which by its shadow indicates the time of day.

The precise meaning of gnomon in geometry is that figure which added to a figure increases the size of the latter but maintains the original shape. This gnomon suggests the idea of format, prototype, pattern, and standard. This sense of serial template may explain the modern preoccupation with serial proportional systems. Renaissance proportion studies sought harmony within parts of the human body. The Modulor begins here but seeks similar harmonies in both increasing and decreasing scales. The Fibonacci series is thus a kind of gnomon. Some familiar gnomons include weather vane, plumb bob, doorway, Stonehenge, treadmill, phases of the moon (actually a form of sundial) and gyroscope. The Ise shrine in Japan, rebuilt and always the same and the Zurich Pavilion by Le Corbusier, with easily reassembled spaces under permanent roof come to mind as examples of architectural gnomons. Change and permanence, tempo and duration, are at the root of a way of life. We are living in a world revolution. The earth turns and every day a new light is born. Our spinning planet itself is a gnomon.

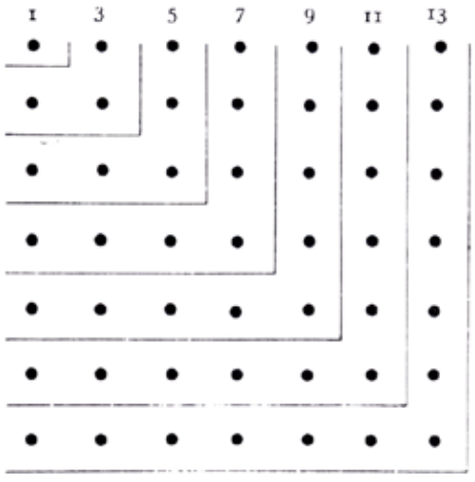
The substance of the genetic code, DNA , is perhaps a paradigm gnomon. If indeed the central problem of life is organization, and the riddle of form is the fundamental riddle, as Joseph Needham and JBS Haldane suggest, then as architects making living continuity in a world of change, we
clearloy face the problem of establishing not an absolute shape for all time but rather a template or standard for variable repetitions (5).

The subject of painting in the 20th century Is transformation. Kandinsky’s and Pollack’s actions, Magritte’s revelations, Estes’ and Goings’ reproductions, Delaunay’s rotations, and the activated fields of construction and relationship in the works of El Lissitzky, Matisse, Picasso, and Cris among others are plans for the unfolding of our perceptual contemplations and reconsiderations, eidos means both form and idea. These color field divergent animations like jazz are variations on the theme of variation. If the paintings dealing with the intentional constructions (and re-construction) of perceptual space propose a metaphorical world of transformation, what would such transformation mean if it were literally possible in the physical world?

10. Earth image drawn by CalComp plotter, 1977

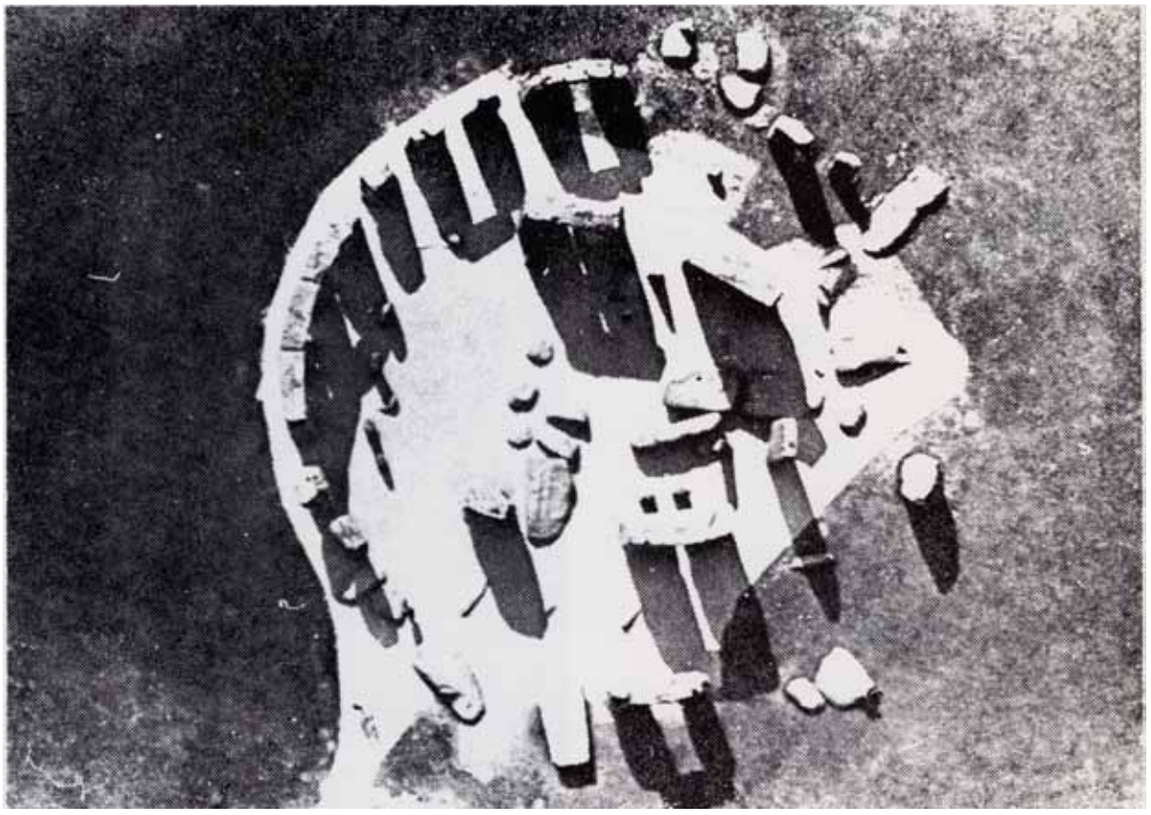


11. Theorem of the Gnomon

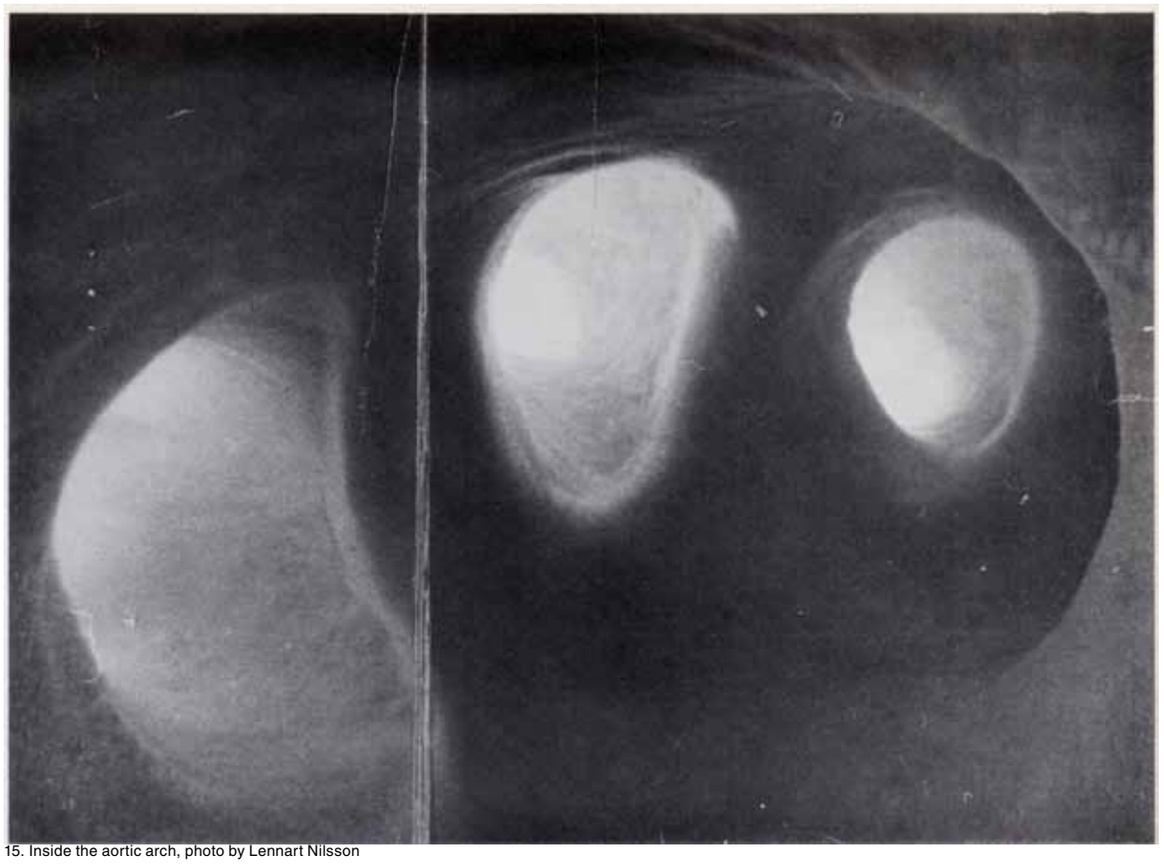


12. The Gnomon

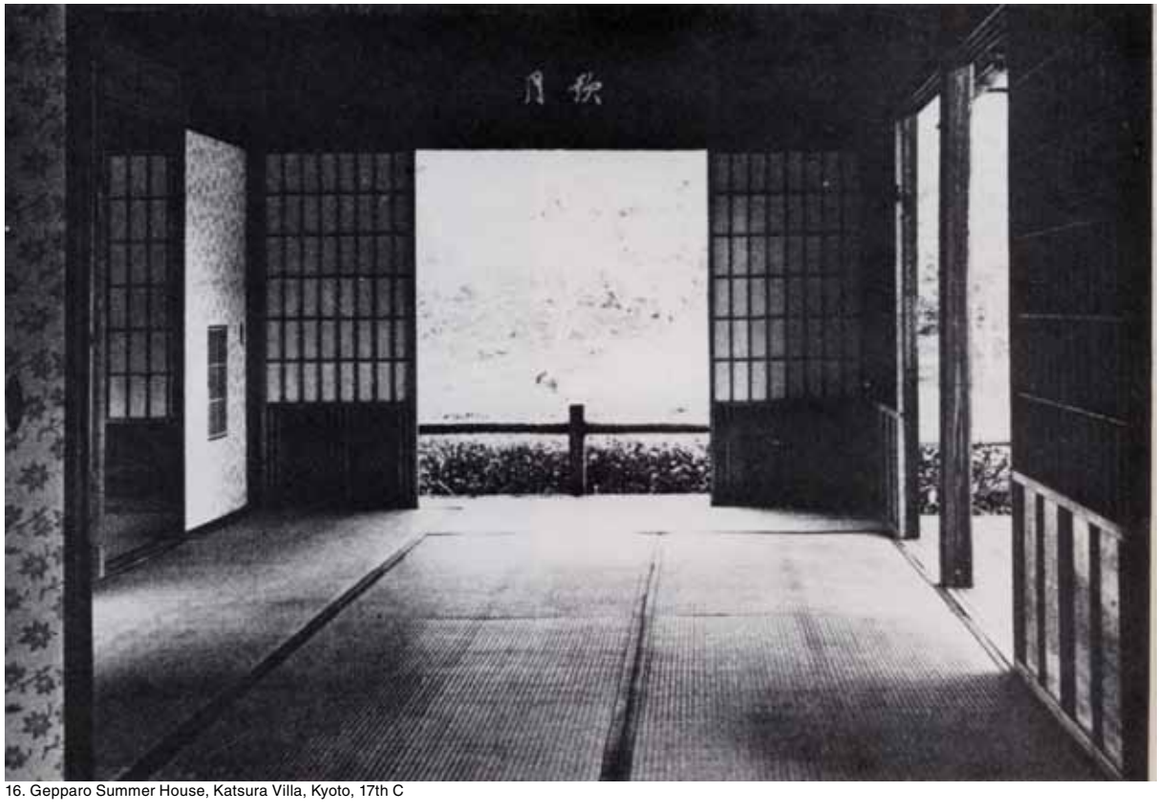
13. Midwinter sunrise at Stonehenge, England



14. Aerial view, Stonehenge



15. Inside the aortic arch, photo by Lennart Nilsson



16. Gepparo Summer House, Katsura Villa, Kyoto, 17th C

PHOTOPOLYMERIZATION

Wolf Hilbertz and his group of architectural researchers in Texas are investigating a process (6) called “photopolymerization.” Basic to xerography, this is a technique involving holography and the controlled chain-linking of certain plastic powders, which may enable the precise duplication of the shape of a three-dimensional object. Going beyond the fantasies of tele-xeroxing models to job-captains at the site and Authentic Reproductions of Michelangelo’s Pieta, the Barcelona Pavilion, or your favorite plant on some vast knick-knack shelf, such a capability would uncover profound ques- tions regarding the human experience of built form and ordered spaces.

One of the central concerns of modern architecture has been “the plastic”. Taking this concept back to its Greek origins, we understand “plastic” in the sense of capable of being molded. An infinit of possible configurations are in flux, out of which one combination of mass, line, shape, surface, volume, color, and size are selected Descartes’ ball of wax is plastic in this sense. It may well be that the very quality of plastic and ineffable space which modern practitioners enter as an unknown realm, encouraging exploration, heightening the senses with the promise of discovery, was seen in the 17th century as the cause of doubt itself.

An essay is included in the posthumous volume 8 of Le Corbusier’s Oeuvre Complet, entitled “Nothing Is Transmissable But Thought,” a kind of last will and testament, and a tacit recognition of the in- evitable action of titanic and miniscule forces that erode beyond recognition the works of man. Thirty years earlier he had expressed a similar intuition:

“The flight of a plane provides a spectacle with a lesson—a philosophy. No longer a delight of the senses. When the eye is five feet or so above the ground, flowers and trees have dimension: a measure relative to human activity, propor- tion. In the air, from above? It is a wilderness indifferent to our thousand year old ideas, a fatality of cosmic elements and events. The huts of the Arab shepherds, clinging to the awesome heights of the Atlas, terribly isolated in a strange game, are in their starkness a revelation of natural violence. The elements are a frightening incubus. From the plane: there is no pleasure . . . but a long concentrated mournful meditation.”(7)

Such a high vantage point anables one to see Flatland revealed, to penetrate to the heart of things, to see both inside and outside at once. “By devious means we reach the center” says Le Corbusier the plastic artist, describing the belief and methodology that supported the years in his Studio of Patient Research.

NOTE: THOREAU'S NUMBER

How long a dwelling may be lived in compared to how long it takes to produce that dwelling is a measure of habitable space in terms of human time. This proportion may give an indication of the value of spirit in a particular culture, because clearly it is to a per- son's advantage to spend as little of one's limited time as possible in erecting a shelter as there are other things to do. These might include defense against marauding beasts or armies, community celebrations, or speculation, wonder, and discovery. It is in honor of this last possibility that I choose to call the proportion Thoreau's Number, and represent it by the last letter in the Hebrew alphabet, Taf.

ת = NET inhabiting / NET constructing

if N = number of people, E = energy, and T = time.
By this formula, for Thoreau

ת = 1 man (60 years lifetime) / 1 man (3 months salary + 3 months const.)
ת = 120

using Thoreau's own reckoning that by spending only $28. 12 1/2 and 3 months of his own labor he demonstrated how to produce a

"shelter for a lifetime at the expense of one's annual rent."

A typical American wage earner might work 10 years of his life to pay for a mortgage on a house that might last 30 years for his wife and children. In this case:

ת = 4 people (30 years) / 1 man (10 years salary for mortgage)
ת = 12

Thus for every hour of free time the wage-earner has, Thoreau might expect 2 1/2 hours. But even Thoreau seems to devote far too much effort to the problem compared to the elegant solutions of the Congo Pygmies:

ת = 2 people (up to 10 months) / 1 person (1/2 day or .0167 month)
ת = 1200!

In terms of dwelling, Pygmies emerge as true philosphers, for they have learned to live simply.

The development of photopolymerization may cause our century to be viewed as the most cluttered of all to have lived through. Presently we are surrounded and often engulfed by the unending products of a very efficient, prolific, complex and industrious machine. Factories are truly plants, creating out of the breath of air and the quickening energy of the sun more cars than we have places to park, more coat-hangers than we have clothes, more containers than food, more information than there is time to comprehend, more fat than we can hang on our bones. In the midst of such abundance, collectively the human body still suffers from poor circulation. Local concentrations may be seen as greed, the proper inheritance of a social economic darwinist natural selection, or simply assets which are far too frozen. The library, farm machinery collectives, and the telephone switching system are all examples of how human invention has overcome mass-intensity stresses and provided time-sharing systems to maximize usage and alleviate storage problems. The space and equipment of the classic Japanese home is also illuminating in this context; there are storage spaces for all the implements of daily life, so that a room may be eating, sleeping, working, or conversing place successively or even simultaneously. The grounding for this potential is that at any time, the room may be empty of all implements and furniture, and remains simply a room.

Consider then the possibilty of a home where one simply places a card in the Fabricator, takes the emerging utensils and places them on the emerging table. After the organic debris has been separated from the plates at the meal's conclusion, these items are returned to the Bin, where they are again stored as elementary molecular material. Perhaps now it is time to request a Beethoven symphony and the stereo equipment to play it, a pair of Wassily chairs and pipe and slippers, a relief map of Hawaii and high-fidelity reproduction of a Maori mask for the evening's delectation. More likely, complete programs such as Your Room As A Kid, Spanish Hacienda, Hippy Dome, or Semiotic Formal Classic will prove popular and ubiquitous. No doubt, whatever might be the human dwelling resulting from such a technology is no clearer to us than rock music was to the inventor of the wireless or Los Angeles was to the inventors of the horseless carriage. "Landing" may come to mean calling into existence the spaces and rhythms of an entire city. Each of us may become Old King Cole.

Just as rare books are maintained in increasingly expensive and complex controlled environments when their contents are stored on microfilm, cheaply available to more people than ever before, so too might spatial ideas become generally available to anyone. The question is raised: "Which forms should be kept as unique three- dimensional objects and which should be considered simply transitory configurations?" Related investigations including the nature of political and social revolution and the forms of human migration and settlement hinge on the answers to this question.

If the common assumption is that what people build are monuments and vessels, then a tradition of permanence can be see to be a direct contradiction to the intentions of political democracy. Jefferson, Lenin, and Mao all suggest that each generation at least needs to re-create it own world. Pluralism is temporal as well as spatial.

How it is possible to establish a civilization with its culture and cities for our descendants when all we know of them is that if they are alive and aware they will question, doubt, and likely reject what we leave them? What meaning could an architecture have in such a case when most of what is created would be discarded or remain as a ponderous and crushing intrusion from an irrelevant past?

These are especially acute problems for architects who would be artists. Artists originally means one who puts or brings things together. The artist now is a seer in touch with the present, the radical who must sweep away convention and reveal everything anew. The architect, original and chief builder (archi- and -tecton), is the archetypal artificer who seeks to embody the commonly understood and traditional values of a culture in enduring forms.

As the Wittkowers show in Born Under Saturn(8), when Brunelleschi refused to pay his dues to the building guild, there was a change in the idea of artist from one who simply made things well to one whose personal insights and actions renewed the understanding of the world. The architect's responsibilities as conservator and coordinator to some extent precluded that the architect was also of the avant-garde, until relatively recently. Wright's insistence that architecture is "the mother art" and his outrageous life directly challenged the old assumptions.

Can architecture be valuable if it is disposable?

"[Eskimo figure carvings]. . . may be passed from hand to hand, then dropped indifferently into a toolbox, or simply lost. Art to the Eskimo is an act, not an object; a ritual, not a possession."(9)

Thus we may consider the possibility of an architecture of transformations, cultivating insight, intuition, re-evaluation, and the personal awakening every enlightened being experiences. An architecture of gnomons suggests how to make the birthplace of both conservators and rebels.

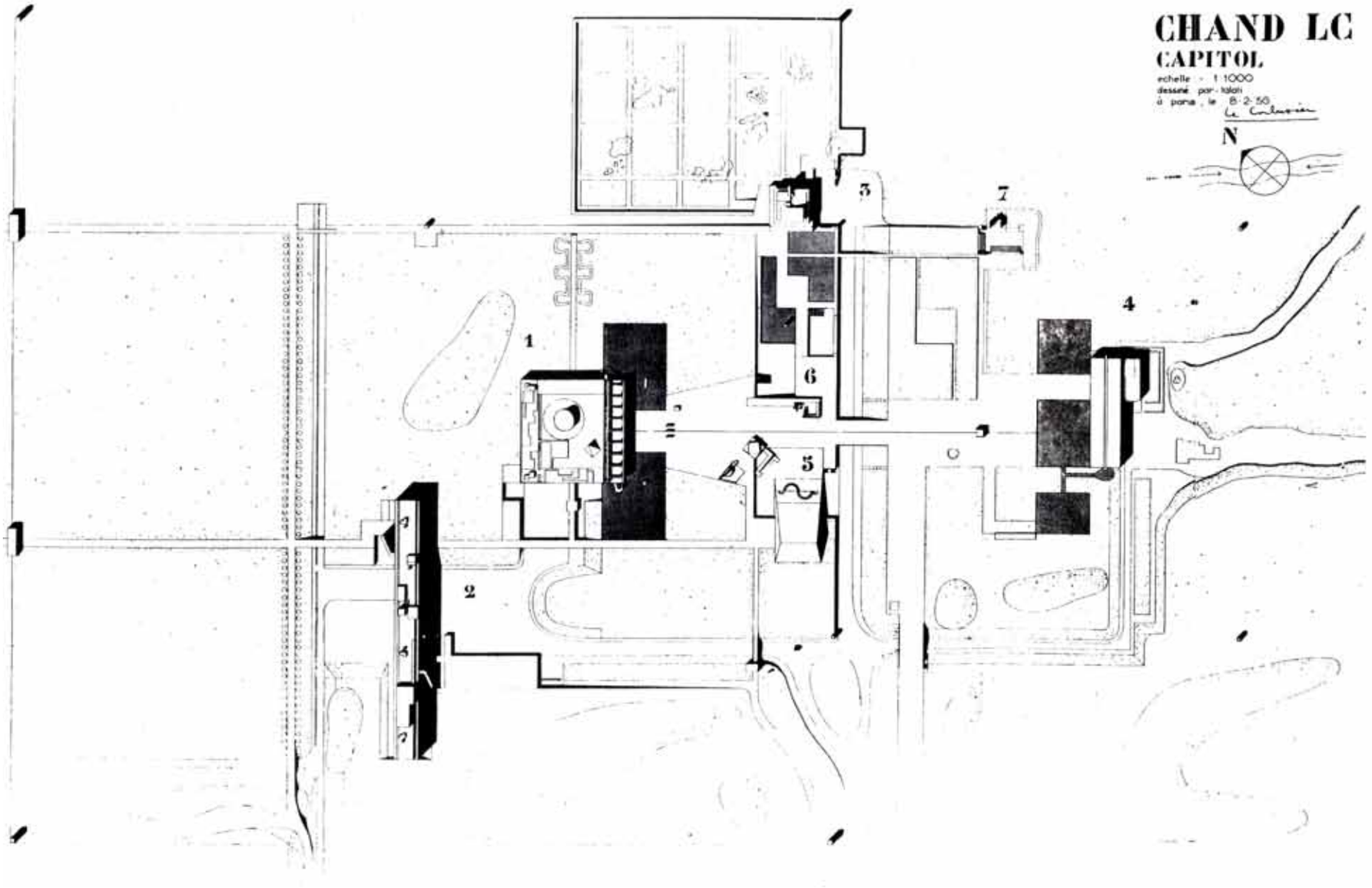
These concerns may be central to a set of designs Le Corbusier proposed for the Indian Capitol at Chandigarh. In addition to the main buildings he proposed a series of what he called monuments. They are also distinct forms of gnomons, each having significance to a different aspect of human experience. Through them change may be known, and architecture may be understood as the play of forces and spaces, as the loving structure and rhythm of energy.

Plan du Capitol

1 l'Assemblée
2 le Secrétariat (les Ministères)
3 le Palais du Gouverneur
4 la Haute-Cour
5 la Fosse de la Considération
6 les bassins devant le Palais du Gouverneur
7 la Main Ouverte

1 Parliament
2 Secretariat
3 Governor's Palace
4 Palace of Justice with the east extensions
5 The Tower of Shadows with the Trench of Consideration
6 The Martyrs' Memorial
7 The Monument of the Open Hand

1 Parlamentsgebäude
2 Sekretariat (Regierungsgebäude)
3 Gouverneurs-Palast
4 Justizpalast
6 Die Wasserbecken vor dem Gouverneurs-Palast
7 Die Offene Hand



17. Chandigarh, plan of the capitol, 1957

THE MONUMENTS

One evening, on the lawn outside the Rest House of Chandigarh, where Jane Drew, Pierre Jeanneret, Maxwell Fry, and Le Corbusier have their base, Jane Drew said: “Le Corbusier, you set up in the heart of the Capitol the signs which symbolize the basis of your philosophy and by which you arrived at your understanding of the art of city design. These signs should be known—they are the key to the creation of Chandigarh.” From this arose the conception of the great esplanade about 400 yards long which joins the Parliament Palace to the High Court, Here the signs of the Modulor. the Harmonic Spiral, the daily path of the sun “le jeu de soleil”, the Open Hand, etc. will be set out. They will be of great size—20 metres high—30 metres long—made of concrete on the site or precast, treated with color, or gilded perhaps, or with bronze and iron plating. LC OC 46-52

It is strange that a man who could claim that “architecture is only made by rebels” in a hymn to the poetry of flight would consent some fifteen years later to an act so seemingly pompous as to design objects which ensure the permanence of a major govern- ment capitol city. It is especially strange because these monuments were intended to be the didactic means to present a theory and method for urban planning, edifices truly for the edification of the multitude. Is this a change in attitude? A closer study of the three monuments most fully developed for Chandigarh may help to reveal the true nature of this apparent apostasy.

The Monument To The Martyr

A martyr is a witness, one who insists upon truth, whose actions ultimately untangle the knots of ignorance. The martyr rises above the multitude, not through personal desires but because of what he or she stands for. It is work to stand, to climb, to struggle against the forces that weigh upon us—gravity, entropy, chaos, fear, and confusion. Moses climbed a mountain and returned to find idolaters. Jesus was crucified above the multitude and was resur rected. The spirit of loan of Arc rose on flames because she would not recant her convictions. The true martyr cannot know of eleva- tion, only the difficulty of the journey. The martyr may be aware that life is a labyrinth, but can never be sure from outward signs whether his or her life is a confounding or unraveling of the difficulties. Faith carries a person beyond exhaustion. Strength may come from an ability to stand, but courage comes from an ability to climb. To understand the martyr one must remember how little room there is between the restriction of boundary (the walls of a prison cell or the endless recursive passages of a maze) and the razor edge of a difficult path to a distant goal—long, ascending, precipitous, straight and narrow.

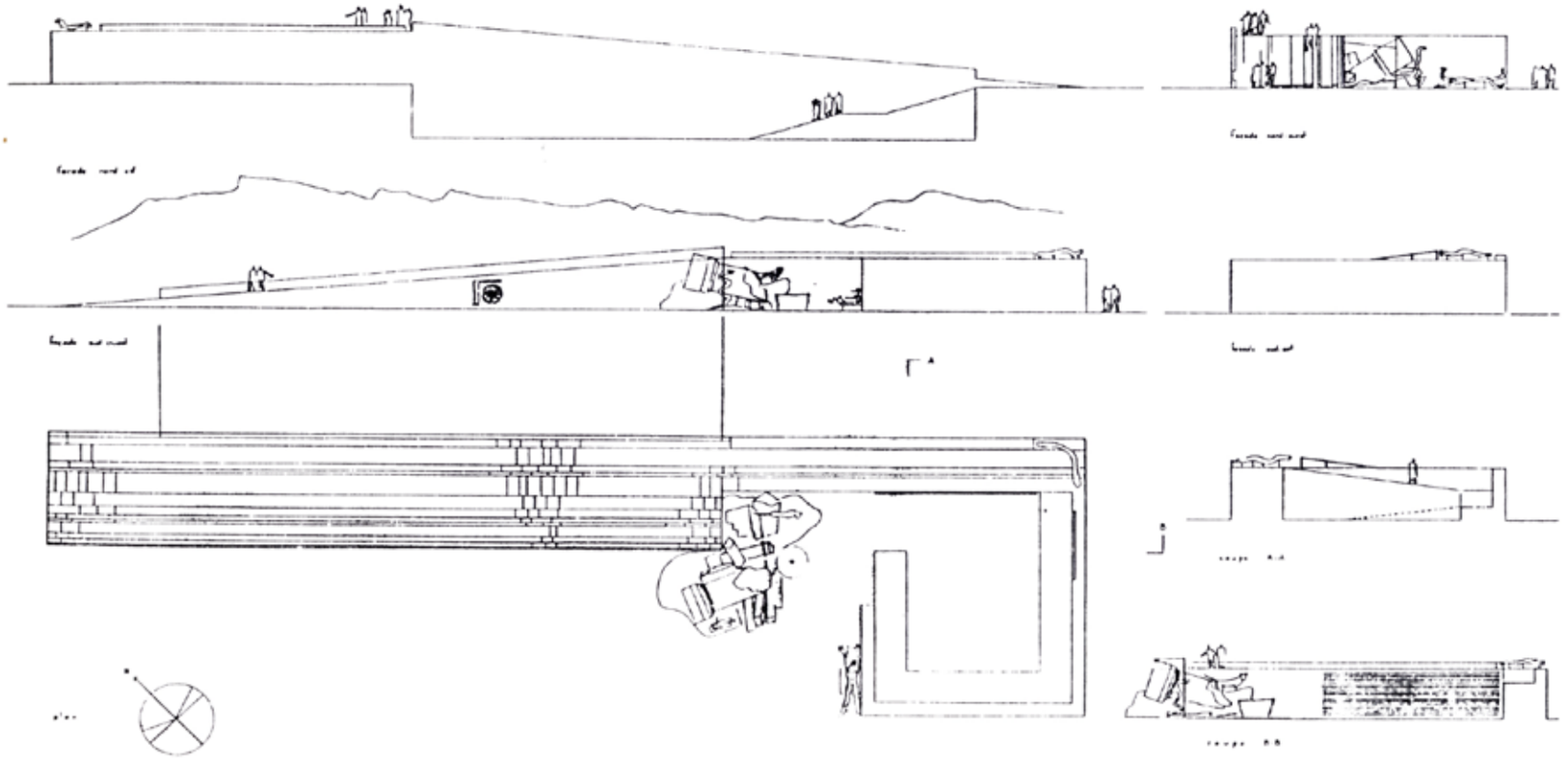
The Monument to the Martyr is a meditation on the significance of the journey. From Le Corbusier’s own travel notebooks we may trace a theme which attempts attempts to put into practice

> “the lessons of an Arab architecture, that it is a walking architecture, meant to be observed by eyes 5 1/2 feet off the ground.”(10)

We find this theme presented in the early sketches of the Acropolis, and developed through the Mundaneum, the “Promenade Architecturale” of Maison La Roche, and the ramps of Carpenter Art Center and the City Hall for Strasbourg, among numerous examples.

Le Corbusier’s own life journey closely parallels the many mystic stories of responsible enlightment like Pilgrims Progress, Lost Horizons, and the Zen parable The Ten Bulls. Down from the mountains in Switzerland, eventually to Greece, the source and sign of the powers of mind, discipline, simplicity, clarity, order, logic, and passion, he proceeds to the City (Paris) and a rich life dispensing the gifts of his inspiration to a hungry host. Finally he transcends these wordly attachments to find the source of his source, the full flowing and fecund stream of Indo-European-Hindu culture Here is a realization of life beyond individual and collective existence, and here Le Corbusier entered his own city.

The Monument to the Martyr, along with the Tower of Shadows, the Arch of the Seasons, and the Wave of the Solar Day, is at the crux of Chandigarh, where the great esplanade crosses the city-capitol-mountain axis The monument is a long rising ramped path leading to a ramped descent into a space enclosed by a 12’ high wall. Guarding the enclosure is a rock and/or concrete bestiary which includes fragments of a colossal column, a tiger, and a cobra. Nearby is a prone Modulor giant. At the extreme eastern point of this ensemble there is a clear and unobstructed view of the earth plane becoming the Himalaya mountains.



18 Monument to the Martyr, plans and elevations

Our approach to this man-made landscape remains ambiguous If one begins at the west end of the long ramp closest to the Parlia- ment, a difficult and lonely ascent above creatures of danger, beauty, and power is rewarded with a brief glimpse of Totality ("the Capitol in all its entirety") before entering a pit of increasing obscurity. The bounded square is the common lot of all but the few who dare to venture, despite obstacles, along the narrow path that continues at the exalted height of 12 feet. The ironical end of even this most isolated branch of the journey is a return toward the common space we all share, albeit at last on a new and higher plane of vision. Yet we may abruptly fall like those before us. The supreme irony is that we will fall outside the simple shelter we might have hoped for as rest and consolation.

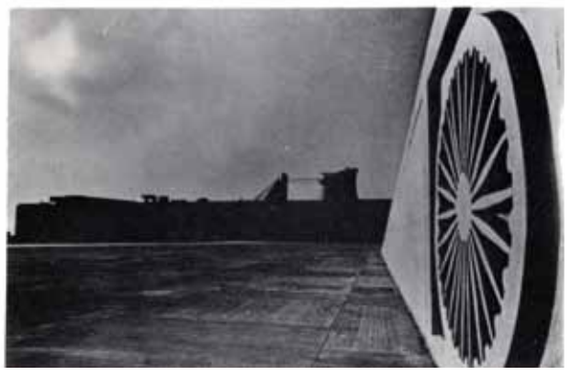
Another interpretation arises if the journey begins from the southwest. Here we find a passage through the jungles of our animal ancestry and destructive forbears, the demiurge, leading to a sheltering womb. As we climb from this protection, our eyes are gradually opened to a world beyond the limitations still shared by the fellows of our generation who have not yet embarked. Again a brief moment of direct confrontation with distant mountains, horizon beyond horizon, and then like Moses a long descent to join the people gathered in the Palace of Assembly. Only after we turn our backs to this assembly, are we again to confront the prone figure, arms outstretched and eyes turning toward the heavens, like Thales at the bottom of a well. This figure, in shadow in the morning and illuminated in the afternoon, is at once a reminder of the conditions of our origins and our end.

These two interpretations suggest the further Hindu and Buddhist idea that the illusion of our lives is attached to the cycle of birth and rebirth. Buddha taught that Moksha, emancipation from earthly attachments and the cycle of rebirths was possible through the cessation of desire. A modern spiritual leader of India, Mohandas K. Ghandi (11), sought Moksha through Ahimsa, the practice of love he called non-violence. The Buddhist symbol of the wheel represents the cycle of life. For Ghandi the wheel had a more particular significance, at once mundane and visionary Ghandi recommended the practice of spinning to make thread on a simple hand operated spinning wheel as the means to salvation and independence for both individuals and all India. One of Ghandi's followers and modern India's first president, Jahawharlal Nehru, was directly responsible for inviting Le Corbusier to design the new national capitol. A wheel is centered on the national flag of India. We may find this same wheel within the incised right angle carpenter's square on the southwest side of the Monument to the Martyr.

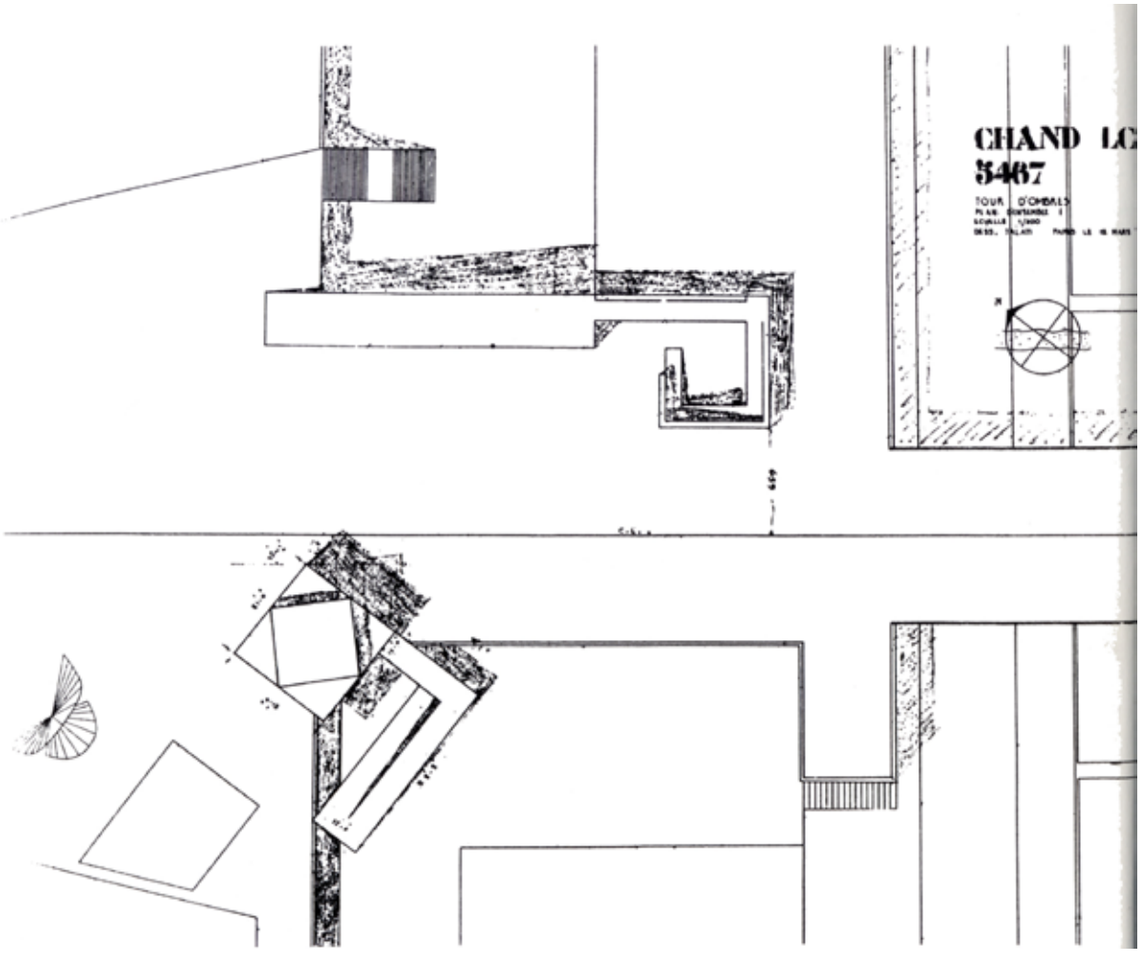
To wind strands together in the face of beasts and death is an act of order against chaos. In the end, is not the martyr the condition of every human being who faces the inevitability of entropy? One may be fortunate enough to glimpse the still point of the hub, but then to enter into the web of human entanglements to share thevision is to return, like Bodhisattva, to the cycles of illusion.

Perhaps these speculations are too personal, too ignorant of the true intention of the creators or conditions by which this work came to be. Nonetheless, such extended associations indicate the presence of a deliberate landscape of phenomenal experience. The elements of such a landscape may be reduced to Mondrian's vertical and horizontal, or elaborated according to Panofsky's definition of humanism (not animal, which implies freedom and value, and not divine, which implies frailty and limitation). However this may be humanity apparently seeks to find a place in the world of understanding, to make sense, or better, to make sense-events. The delight of this search in architecture is to provide human scale, measuring all parts to our grasp, our stature, our gait, our stamina. The Monument to the Martyr is a treadmill and a labyrinth, a gnomon to measure weight and work, the movement of our own mass against the force of gravity, the journey of a human body in a lifetime.

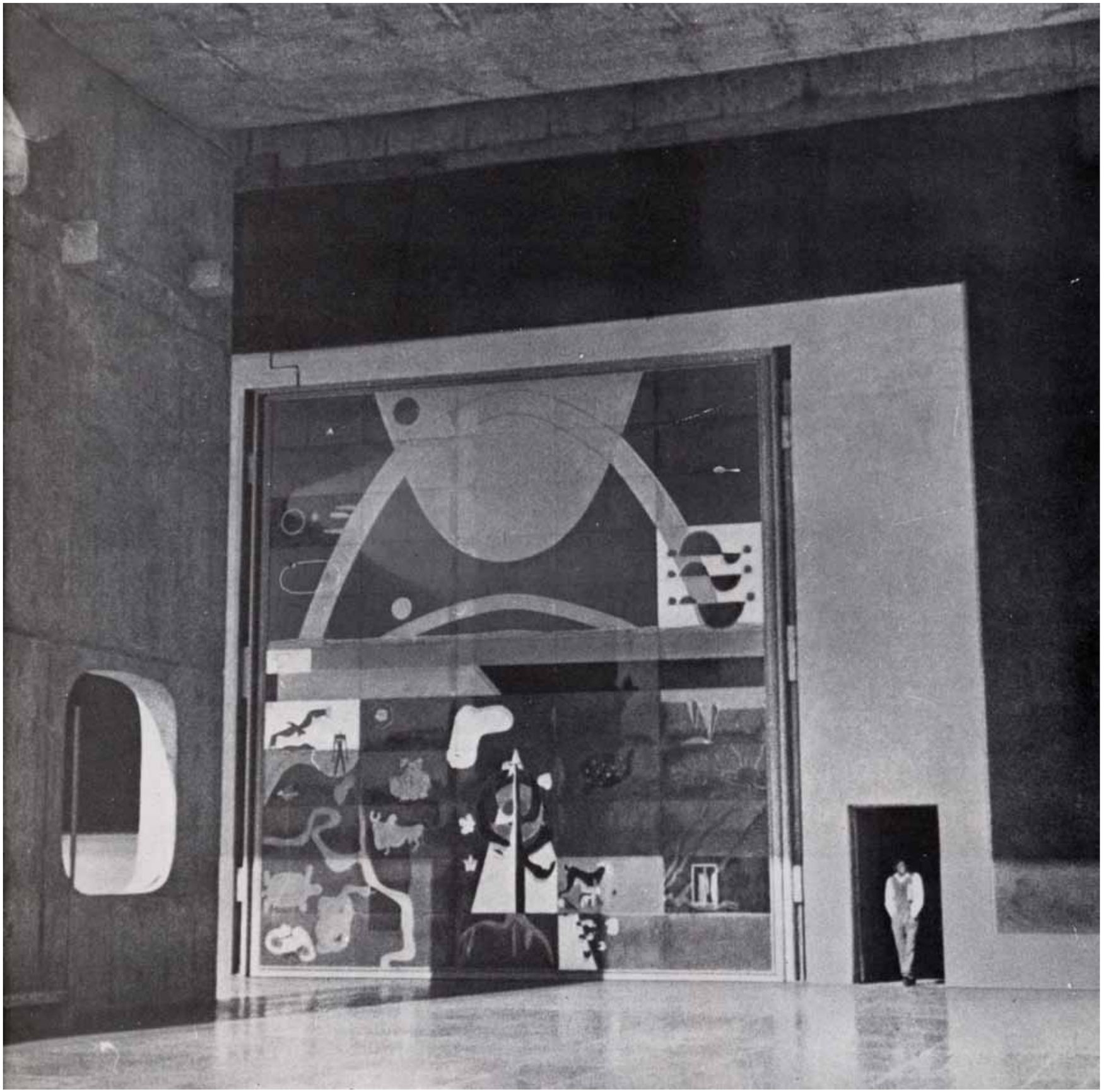
19. Assembly Building with facade, Chandigarh



20. Ramp, Monument to the Martyr, with wheel in right angle

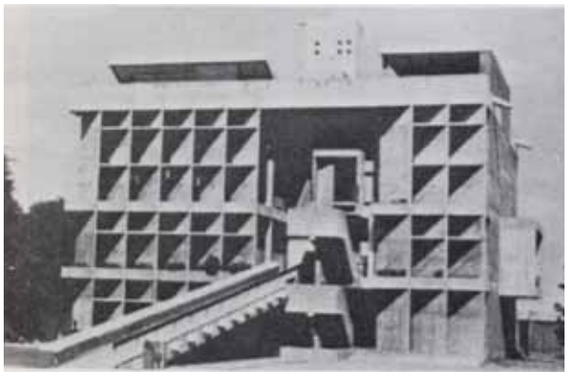


21. Monument to the Martyr and Tower of Shadows



22. Pivoting door entry to Assembly building, showing seasons, animals, plants, etc.

23. Villa at Carches, 1927



24 Millowners Building, Ahmedabad, 1954

25. High Court, Chandigarh, 1950-56

26. Congress Hall in Strasbourg, model, 1964

THE TOWER OF SHADOWS

The Tower of Shadows is planned to go between the Palace of justice and the Parliament building, in the Capitol area. It is a lofty, open-sided hall providing ample shade. In the subdued atmosphere thus created, one can be free to meditate. The building is aligned precisely on the north- south axis, so that it agreeably interrupts the severe symmetry of the enormous square. The north side is entirely open, and the other three faces are furnished with brise-soleil. LC OC vol. 8

The Tower of Shadows belongs to a class of space structures that Le Corbusier experimentally developed and explored throughout his long career. The proposition of simple slab trabeation, eventually clothed with a rich relief layer that varies according to orientation is first stated in Maison Domino in 1914. The tentative puncture at the top of the front facade and the deep push-pull cou/isse of the rear garden entrance at the Villa at Garches are early attempts to allow frontal columes to modify the simple layering of horizontal floor slabs. Villa Shodan, like the proposed office tower for Algiers (scheme C), further explore the solid-void ambiguity of an equal play of erosion and construction throughout an entire volume. With the Mill Owner's Building at Ahmedabad and the Carpenter Art Center, the situation of Carches has been reversed. Now the hole, the coulisse, has become the ground upon which the structure of wall slab and column have been imposed, so that inevitably the holes become the place of entry, not so much a puncture into an unyielding mass as a form of space itself, a natural union of landscape with the very heart of the building, to which facade elements are clearly and respectfully subservient Here the central spaces are so tangible that such highly sculptural elements as ramp and stair in no way violate or destroy the essentially hollow nature of the works.

The entry space at the High Court at Chandigarh is basically a free standing volume, flanked by the masses of the courtrooms. The vertical circulation has been pulled all the way through the building, leaving only a powerful dialog between polychromed fins and void at the place of arrival. The City Hall at Strasbourg takes the question of building as wall, hollow, and path one step further. Here the ramp leads up to a colonnaded stylobate where we may continue beyond the building entirely, climbing a torqued propylaea to a hyperbolic paraboloid roofscape. Thus at one and the same time the building may be understood as Parthenon, complete with plinth base, columned space, and pediment roof, and as the entire Acropolis itself, perhaps not so far-fetched antecedents for a political and cultural center for a modern city.

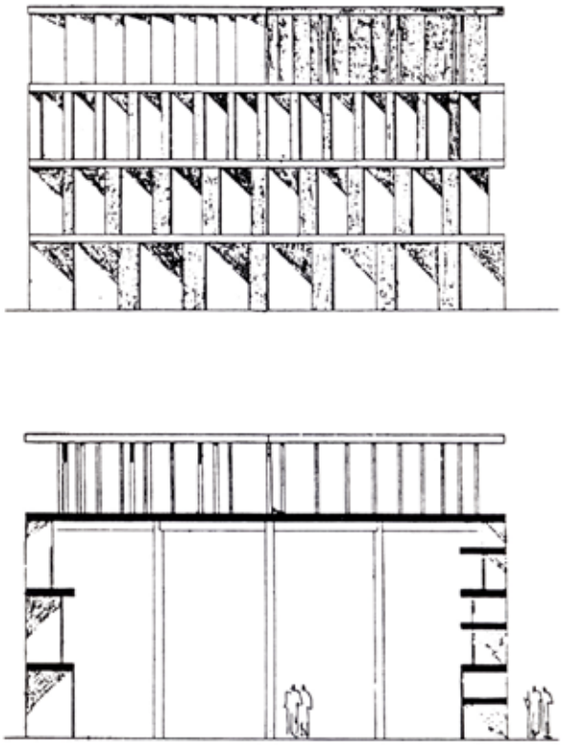
The origins of this round and deep theme may be in young Jean- neret's sketches of the Acropolis. But the Tower of Shadows, hollow and rotated, as much as six stories above the Trench of Consideration, indicates an additional theme running through the development of this form. The re-rotated apartment atop the Tower, just slightly off axis to the major orienting lines of the entire Capitol complex, the horizontal bands of rhythmically variegated brise-soleil, and the dynamic form of this mass in relation to its setting recall a landmark which inspired some of the most passionate sketches in all the early voyage notebooks—The Leaning Tower of Pisa.

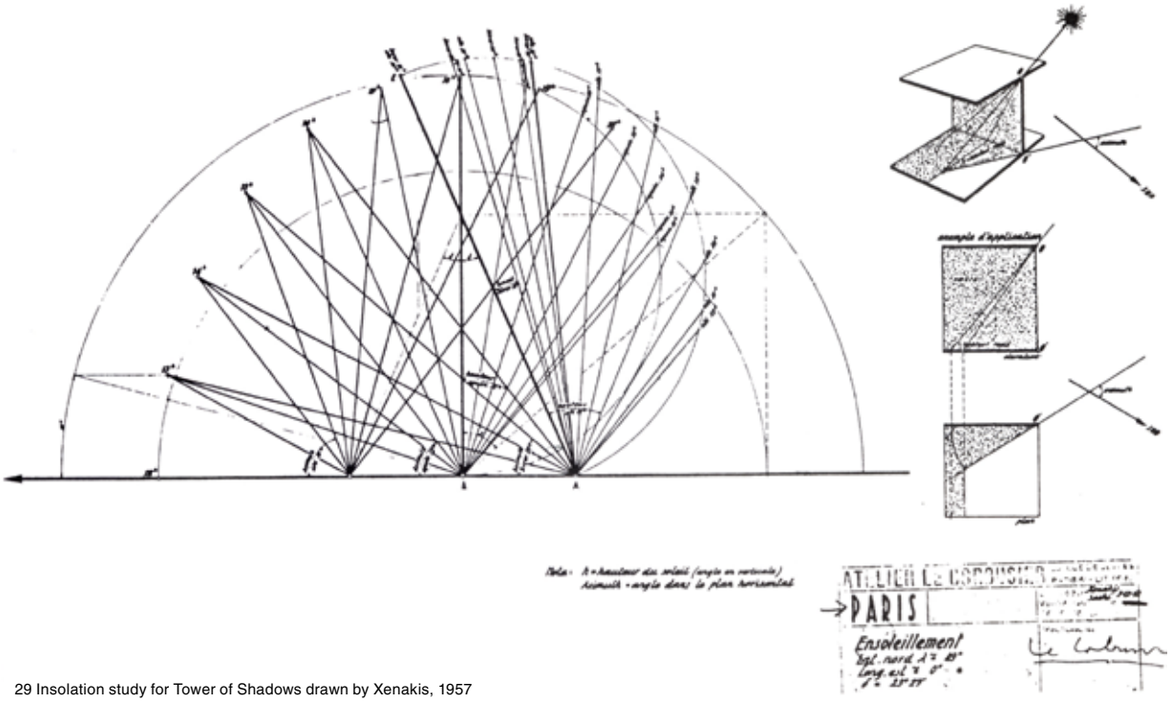
27. Pisa, sketch by Jeanneret, c. 1906

A landmark is an isolated bit of data in an otherwise undifferentiated field. Several together may provide a matrix for com- binatorial meaning, like a crossword puzzle. But such a matrix is a crossword puzzle not yet filled in, a microprocessor awaiting a program. An attentive brain without prejudice is the necessary armature or preamble to meaningful form. The capacity to view a complete ensemble in many ways for many intersections, like a filled-in crossword puzzle, is what allows us to find meaning in the chaos of the world. The Tower of Shadows requires the play of light and shade to become animated and intelligible This play is a rhythm which precisely reveals the time of day, orientation, and season of the year if any index of reference is known.

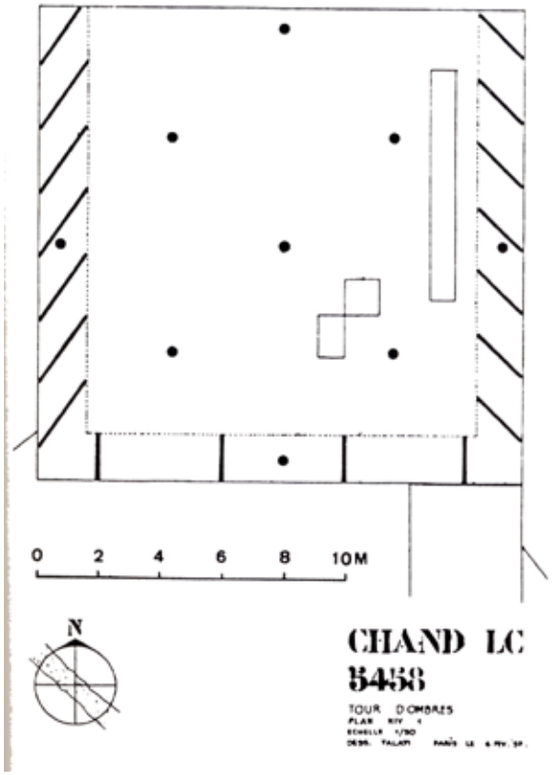
Physicists currently measure time in metres. A milestone, the Kaaba Black Rock at Mecca, or an obelisk indicates an interval of space or time according to its proximity to us. Far away also means ancient or in the future. A sundial and the great astronomical in- struments like Stonehenge or the observatories at Jaipur bring us into relation with distant heavenly bodies by marking their motions, The obelisks on the 400 metre grid and the Tower of Shadows are landmarks for Chandigarh. But the Tower is an obelisk with a heart, hollow like the caves of Plato and King David. Buddha sat under the sheltering shade of the Bodhi tree and was enlightened. One may turn from the shadows on the wall of Plato's cave and find the truth in sunlight. To follow intuition may lead to illumination. To truly see with the eyes may brighten the heart.

The Tower of Shadows is a collective reference volume accessible to all on its open north side. It is also a collective reference mass, visible in a relief precisely determined by the path of the sun to all who approach the capitol. An enlightened mind radiates, bringing clarity to those in darkness. The Tower of Shadows is a gnomon to measure not only the sun, but light and space in general, the events of illumination and intelligence Through its simplicity we may come to know Mind and human consciousness

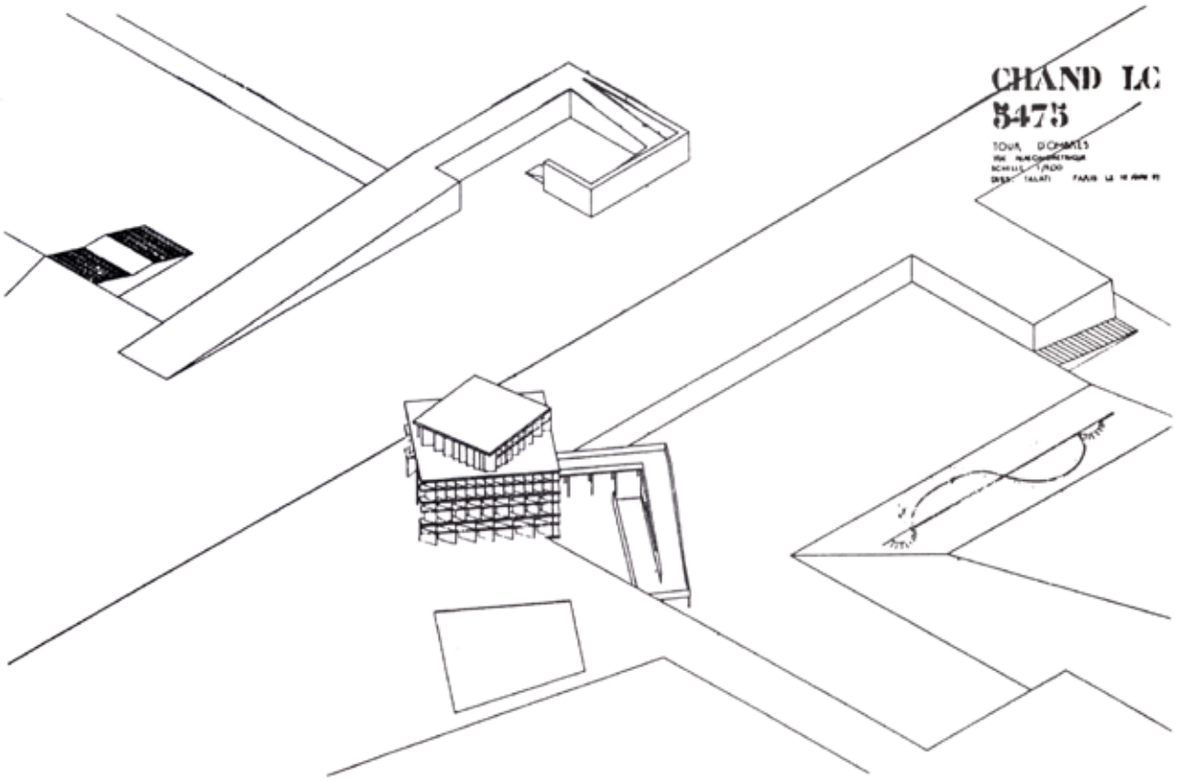




29 Insolation study for Tower of Shadows drawn by Xenakis, 1957

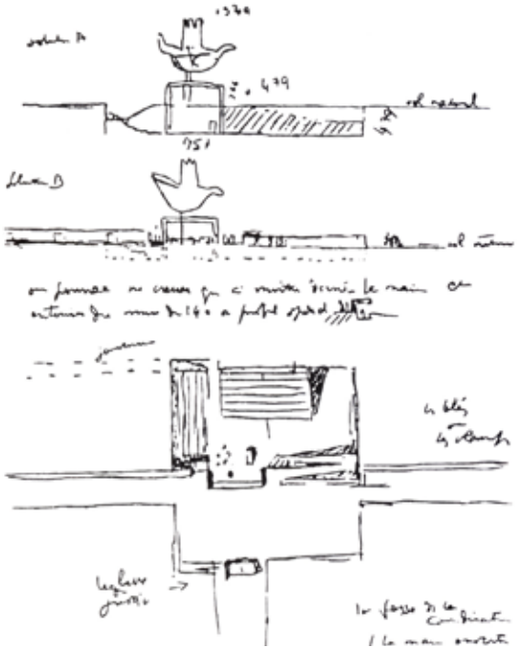


28 Tower of Shadows, plan, section, elevation



30. Axonometric, Tower of Shadows (square and diamond)

31 Indian women carrying water vessels (photo Cuchen)



32. Study plan for Open Hand and Pit of Meditation

The Open Hand

> "The airplane is the symbol of the new age. At the apex of the immense pyramid of mechanical progress it opens the New Age, it wings its way into it."(13)

Le Corbusier's "new vision" was of crisp, sharp, simple, spare, clean spaces His work from 1922 through World War II follows this dry unrelieved puritanism, challenging and didactic at almost every op- portunity. Pavilion Suisse, especially the stone wall and modulating piloti, is a notable exception In the light of subsequent developments, it is astonishing to think that if Le Corbusier had retired at the age of 55, we might be placing his work alongside Breuer's, Oud's, Gropius'—inventive and highly reasoned in plan perhaps but nonetheless expositions in a new renaissance tending toward enameled steel; houses arrogant and aloof to the same degree that bombers and jet planes seem to us invaders from a Military Industrial State. The call to create passion out of inert stone would rarely have been answered in his own work; perhaps in the Maison de Weekend, the Errazuris house, a few others. Yet by the time of the publication of Volume 7 of the Oeuvre Complet the Open Hand appears as a mirage on the cover, in a red light space of dreams.

What fundamental change took place to produce the sculptural fluidity of La Tourette, Ronchamps, and Chandigarh? Anthony Roccannova suggests that Le Corbusier on his life pilgrimmage came to India and found the tremendous celebration of life and reverence for the cosmos that was even the source of Greek clarity itself The richness of the Hindu multi-limbed multi-lived deities removed from the self-assured architect any remaining need to demonstrate cleverness, superiority of mind, or homage to the mechanisms of human ambition. Rather here at every turn was a magnificent, pulsing, infinite union of all sense, through which heart rather than a single man's intellect emerges as sustaining presence. Whereas in Europe it appeared that only those who created or thought could share in "I'esprit nouveau", in India Creation and Design were revered in every bull who walked the streets. While Nehru may have eagerly discussed the new democratic India with Le Corbusier the architect, Le Corbusier the plastic poet was filling his notebooks with the "presence of sombre grey bulls and white cows" and the ancient method of carrying water.

The Open Hand is the crowning event in the plastic symphony of Chandigarh It is approached from the residential sector, between the buildings of lawmakers and judges. The capitol is Logos, the head, the mediator for the manifold wilderness of the Himalayas and the plain of the city. Along with the Governor's Palace which for a while was to be the Museum of Knowledge, the Open Hand forms the last tenuous human artifact before the wall of the highest mountains on earth. The Open Hand is first seen embedded as part of the mountains. The closer we get, the more the Open Hand rises from its place on earth, until its image is entirely above the line of the mountains, a pure silhouette against the sky. Then we must descend into the Pit of Contemplation, a place for those officials and humanitarians who may be "sunk in thought", "feeling the weight of the world on their shoulders."

There are sketches of the project which indicate several ghostlike people on a balcony with a railing, giving a definite scale to an object which could have been many other sizes, including the vastness of Soleri's arcologies. It is not clear at all how people get up there. Through the portal frame below the Open Hand there rises a column which supports a ball-bearing device that allows the Open Hand to turn freely in the wind

> "not to show the incertitude of ideas, but to indicate sym- bolically the direction of the wind (that is, the state of affairs)."(14)

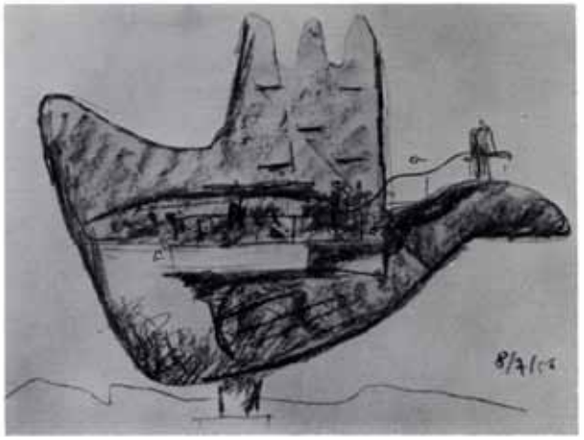
Perhaps this column might include a spiral stair but the junction between cylinder and base of hand is too abrupt to allow passage for any but the most ephemeral of humans. We must conclude that the idea of people on the Open Hand remains an equivocal projection, as inaccessible as a hopeful dream. This ambivalent attitude toward permanent interpretation may be found in the Declaration of Independence and the Chinese Cultural Revolution of 1968-69. It is a question of the eternal creation of the anarchic moment. Or as Le Corbusier put it:

> "It is a question of harmony. In aviation everything is scrapped in a year."(15)

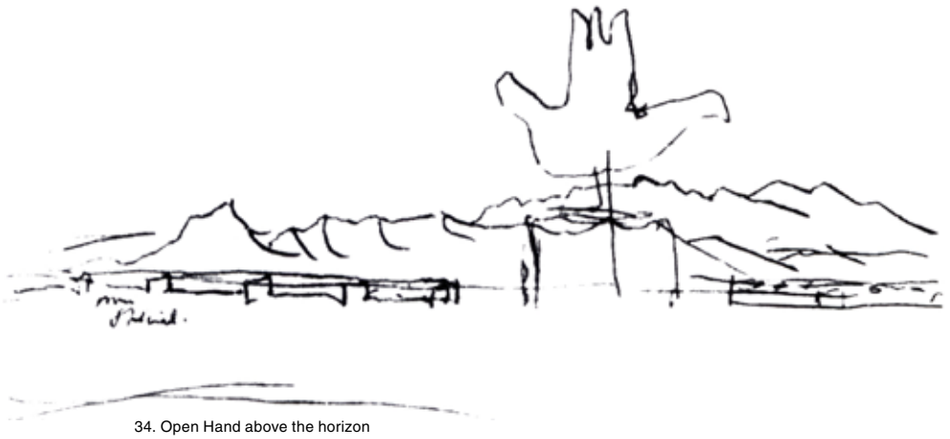
The Open Hand is a hollow bowl as well as a flag or signpost Erwin Straus noted that "enthusiasm" in Creek is En-theos-iasma—to perceive God (16). To understand intuitively is a direct and personal act, and no amount of mediation or explaining can communicate directly through the senses or quicken the imagination. At best such work can prepare the view, but it cannot open eyes which do not see.

> "New machines, new men. They are filled with enthusiasm, the pleasures of daring, or breaking with current stupidities. Once in the air, carried along by the wind, they exuft in the daring of their departure. "(17)

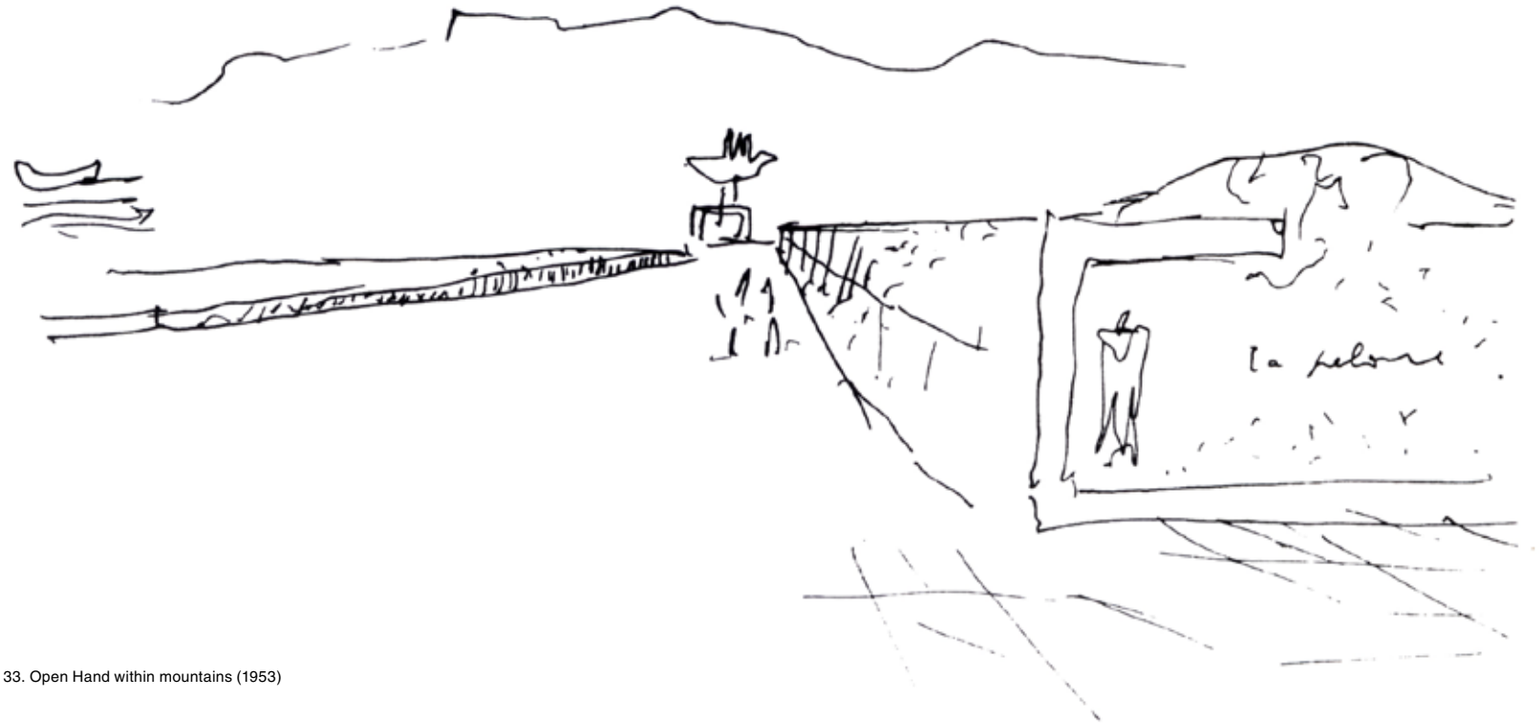
Perhaps Le Corbusier never intended to give people an easy path to the vantage of the Open Hand. Perhaps these participatory structures, gnomons more than monuments, were to be the setting for some future version of Le Corbusier's own discovery and epiphany at the Acropolis, an integration of brain and body through the harmony of man-made forms and the direct experience of space transmitted across generations. The Open Hand, rising above mountains, wingspread bird silhouette, moving freely with the wind, a sea shell in an early vision, made of the metal skin used for the "admirable local water vessels", is the closest thing to an airplane the architect ever designed. Beyond gravity the profound image rises to the skies. Leaving the reference plane of earth's horizon not in the direction of excavation, archaeology and digging, but as an exultation ever deeper into the heavens, the Open Hand, this soaring weather vane, is a gnomon to measure the most elusive am necessary phenomenon of all. It is a gnomon to measure air, to measure breath, to measure spirit.



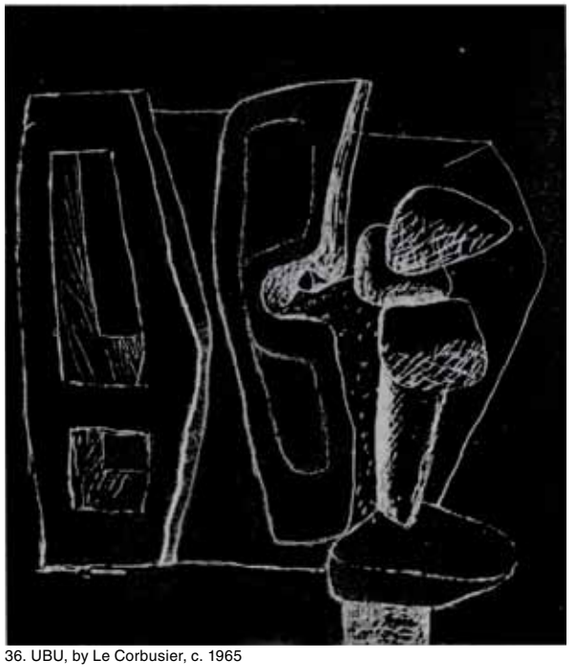
35. Enigmatic figures (1956)



34. Open Hand above the horizon



33. Open Hand within mountains (1953)



36. UBU, by Le Corbusier, c. 1965

37. Inner ear. showing semicircular canals and cochlea

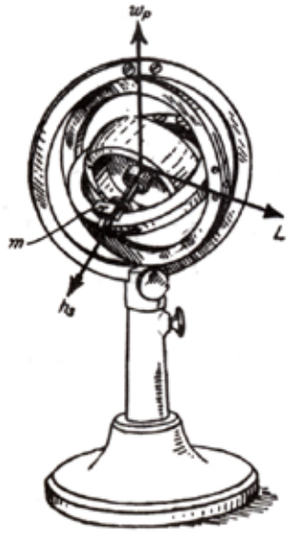


FIG. 35

38. Gyroscope

THE SENSE OF ARCHITECTURE

Experiments and medical observations aboard Skylab have indicated that one of the effects of long-term living in zero gravity may be a reduction in memory, coordination, balance, and genera ability to interrelate a series of many events. It appears that these (18) abilities are related to the functioning of the inner ear, the vestibular organs of balance. Without gravity to push the calcium crystals against the cilia in the semi-circular canals our normal biological gyroscope appears to become disoriented. It appears that the astronauts began to lose their congenital inertial guidance. It may be that the tendency to actually or imaginatively experience a pleasing sequence of vestibular pressures give rise to what Le Corbusier terms “plastic emotion”.

The idea that we constantly measure change reintroduces fully integrated human perceptions as a necessary ingredient in the plastic equation. Carrying the weight of the body, seeing the play of light and shade, feeling the breath of the wind, sniffing the air, doing these things with attention we may begin to understand how architecture exists for and through the senses. The brain is the most complex junction of nerve endings in the body and may be regarded as the ultimate sense organ, particularly sensitive to integrated relationships. Thus to make architecture only as the play of shapes or only as isolated decorative sensations is to deprive architecture of the connective transformations, the quickening pulse of life.

Chandigarh is incomplete. The monuments have not yet all been built. Perhaps the city is intended to remain conditional and elusive, like the images of its buildings in its great reflecting pools, requiring a conscious eye and integrating spirit to complete the presence. The suggestion is that the sense of architecture is available not to a disembodied intellect, but to anyone who is conscious of weight and work in the world and the contingent and participatory nature of being in space. As Jullian de la Feunte says, we must even know how a building smells. Le Corbusier may have realized in the end that there was no way to explain his experiences unless the moment of their revelation could also be transmitted. He may be proposing, for those of us who wish to take up the challenge, a new Acropolis and Kairos at the foot of “the roof of the world”, substituting weather vane, sun dial, and labyrinth for his calendar of shattered stones. Perhaps another may arrive and be moved to awe. to be awakened as the young Jeanneret was on the sacred Athenian platform:

> “Touching them with his fingers, caressing them, he grasps the proportions of the design. Amazement: reality has nothing in common with books of instruction. Here everything was a shout of inspiration, a dance in the sunlight .... And a final supreme warning: do not believe until you have seen and measured and touched with your fingers.
>
> Such was L-C’s school of architecture. It had provided his education, opening doors and windows before him—into the future.”(19)

Music is heard through the vibration of air against tympanum (and cochlea’), painting is seen through the light in our eyes, and the touch of sculpture begins at the skin. The deepest sensory nerves are the organs of equilib rium, archaic hollows within the bones of the skull itself. In a way they are the reference data for all other perceptions, navigation aids to determine direction, intention, momentum. Balance weighs and measures: things are weighed on a balance scale. Thus the labyrinth of equilibrium more than any other sense provides a constant measure of change in space. An architecture of gnomons celebrates this sense, as is obvious on sports field and ball court. As a body moves through space, architecture can be sensed as a balance of concrete relationships. Thus may the sense of architecture—the experience of free body and wondering mind as unity in space-time— reveal and delight in the most profound continuities and transformations.

39. Astronauts Pogue and Carr in Skylab 3

40. Otoliths

41. Parachutist, c. 1935

NOTES

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18. Personal communication with colleagues at the Johnson Spaceflight Center, NASA, Houston 1977 (note: I do not believe this will be permanently debilitating It may simply be a question of learning to amplify properly the new signals. Whereas on earth [in a strong gravity field] the otoliths generally press against the "bottom" of the canals, under weightless conditions the inertia of the stones will hit every surface of the cilia. Perhaps our sense of space, depth, and coordination will become much richer. Second generation fish, spiders, and tadpoles born in space support this optimism.)
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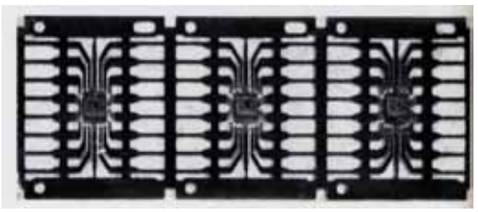

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First published in *Central Papers on Architecture*, 1980
John Meunier, Editor

ILLUSTRATIONS

1. *Great Wave Of Kanagawa* by Hokusai, c 1823
2. The Pyramid and Sphinx of Chephren, IV Dynasty
3. Ting Bronze Vessel, China, Shang Dyn, 1100 BC
4. Noah's Ark above the Caucasus
5. Lunar Module. NASA, 1969
6. Quarters for Rural Caretakers, by Ledoux, 1804
7. "Carrier City in Landscape" by Hans Hollein, 1964
8. "Modulor Woman" by Serralta and Le Corbusier, 1958, and "Studio del corpo umano" by Da Vinci, c. 1500
9. "3 III 1956" by Pablo Picasso
10. Earth image drawn by CalComp plotter, 1977
11. Theorem of the Gnomon
12. The Gnomon
13. Midwinter sunrise at Stonehenge, England
14. Aerial view, Stonehenge
15. Inside the aortic arch, photo by Lennart Nilsson
16. Gepparo Summer House, Katsura Villa, Kyoto, 17th C
17. Chandigarh, plan of the capitol, 1957
18 Monument to the Martyr, plans and elevations
19. Assembly Building entry facade, Chandigarh
20. Ramp, Monument to the Martyr, with wheel in right angle
21. Monument to the Martyr and Tower of Shadows
22. Pivoting door entry to Assembly building, showing seasons, animals, plants, etc.
23. Villa at Carches, 1927
24 Millowners Building, Ahmedabad, 1954
25. High Court, Chandigarh, 1950-56
26. Congress Hall in Strasbourg, model, 1964
27. Pisa, sketch by Jeanneret, c. 1906
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